

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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(PCT Article 36 and Rule 70)

(Rationalised Report according to the Notice of the President of the EPO published in the OJ11/2001)

Applicant's or agent's file reference  100651-1 WO	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
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International Patent Classification (IPC) or national classification and IPC  C08F220/12		
Applicant  ASTRAZENECA AB		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 2 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consists of a total of \_\_\_\_\_ sheets.

3. This report contains indications relating to the following items:

I  Basis of the report

II  Priority

III  Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

IV  Lack of unity of invention

V  Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

VI  Certain documents cited

VII  Certain defects in the international application

VIII  Certain observations on the international application

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**I. Basis of the report**

The basis of this international preliminary examination is the application as originally filed.

**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability**

In light of the documents cited in the international search report, it is considered that the invention as defined in at least some of the claims does not appear to meet the criteria mentioned in Article 33(1) PCT, i.e. does not appear to be novel and/or to involve an inventive step (see international search report, in particular the documents cited X and/or Y and corresponding claim references).

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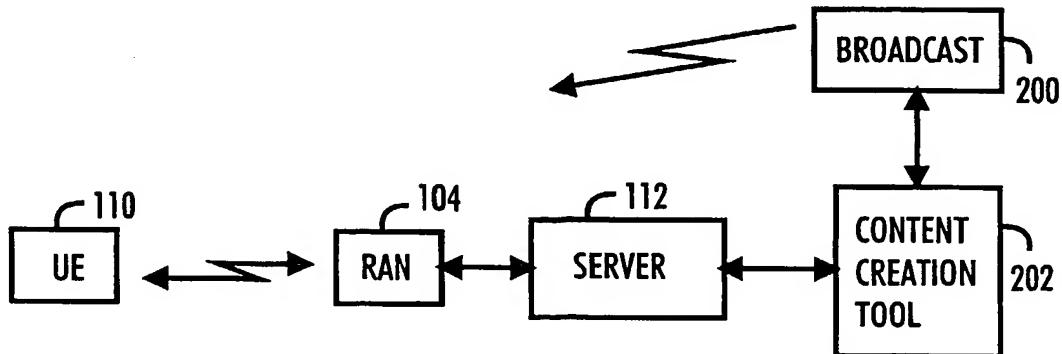
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## Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

[Continued on next page]

(54) Title: METHOD, SYSTEM AND USER TERMINAL FOR COLLECTING INFORMATION ON AUDIENCE OF BROADCAST MEDIA STREAM



WO 03/090482 A1

(57) Abstract: The invention is related to a method for collecting information on an audience of a broadcast media stream. The method comprising: broadcasting a media stream on at least one broadcast channel of the broadcast system, transmitting parallel information on at least one parallel channel which parallel information is associated and synchronized with the media stream of at least one broadcast channel, connecting the audience to the media system as passive users or active users, the active users receiving the parallel information and the passive users not receiving the parallel information, collecting information on the audience connected to the media system, the information being on active users and/or passive users, processing the collected information in a predetermined way.

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**Published:**

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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## Method, System and User Terminal for Collecting Information on Audience of Broadcast Media Stream

### Field

The invention relates to a method, a system and a user terminal for collecting information on the audience of a broadcast media stream.

### Background

Many broadcasters are interested in monitoring their audience for several reasons. Especially commercial radio or television broadcasters need customer information for improving their business; the more they have listeners 10 the more tempting they are from an advertiser's point of view. Advertisers also need information on their campaigns: how many customers listened to an advertisement, whether they liked it or not, how well the product sold, etc.

In the prior art there are several research methods for collecting information on audience. Some widely used methods are questionnaires or focus group interviews. These methods are quite slow and they cannot be used 15 in online adaptation of the broadcast. Additionally, questionnaires or group interviews are directed to a selected audience group, the size of which is limited. Therefore the reliability of the results depends strongly on advance planning and the size of the group, since the size of the group has to be quite significant 20 in order that the result is reliable, the expenses rise correspondingly.

Especially, the prior art methods are not rapid enough in monitoring the audience of interactive programs which nowadays are becoming more and more popular.

### Brief description of the invention

An object of the invention is to provide an improved method for collecting information on an audience of a broadcast media stream. The method comprising: connecting a radio telecommunication system and a broadcast system to perform a media system, broadcasting a media stream on at least one broadcast channel of the broadcast system, transmitting parallel information on at least one parallel channel which parallel information is associated 25 and synchronized with the media stream of at least one broadcast channel, connecting the audience to the media system as passive users or active users, the active users receiving the parallel information and the passive users not receiving the parallel information, collecting information on the audience con-

nected to the media system, the information being on active users and/or passive users, processing the collected information in a predetermined way.

According to an aspect of the invention, there is provided a media system for collecting information on the audience of a broadcast media stream,

5 comprising: means for broadcasting a media stream on at least one broadcast channel of the broadcast system, the broadcast system being part of the media system, transmitting parallel information on at least one parallel channel which parallel information is associated and synchronized with the media stream of at least one broadcasting channel using a radio telecommunication system of the

10 media system, means for connecting the audience to the media system as passive users or active users, the active users receiving the parallel information and the passive users not receiving the parallel information, means for collecting information on the audience connected to the media system, the information relating to active users and/or passive users, means for processing

15 the collected information in a predetermined way.

According to another aspect of the invention, there is provided a user terminal for collecting information on an audience of a media stream broadcast by a media system comprising: means for receiving parallel information on at least one parallel channel which parallel information is associated and synchronized with the media stream of at least one broadcast channel of the broadcast system, the broadcast system being a part of the media system,

20 means for connecting the audience to the media system as passive users or active users, the active users receiving the parallel information and the passive users not receiving the parallel information, means for changing a parallel information reception state according to the user's selections, means for transmitting selections made by active users for collecting information on the audience connected to the media system, means for showing the collected information.

Further embodiments of the invention are described in the dependent claims.

The method and system of the invention provide several advantages. According to an embodiment of the invention, the radio station is able to observe the development of an on-line audience almost real time, obtain viewable statistical information on the audience and arrange interactive polls, competitions, etc.

### List of drawings

In the following, the invention will be described in greater detail with reference to the preferred embodiments and the accompanying drawings, in which

5 Figure 1 shows an example of a wireless telecommunication system,

Figure 2 is an example of a media system,

Figure 3 is a flow chart,

10 Figures 4A-C show an example of a broadcast system, a server and a content creation tool,

Figure 5 shows an example of a user terminal.

### Description of embodiments

Referring to Figure 1, a block diagram illustrates an example of a wireless telecommunication system. The wireless telecommunication system 15 may be based on, for example, UMTS (Universal Mobile Telephone System) or WCDMA (Wideband Code Division Multiple Access).

The core network may correspond to a combined structure of the GSM (Global System for Mobile Communications) and GPRS systems (General Packet Radio Service), for example. The GSM network elements are responsible for the implementation of circuit-switched connections, and the GPRS network elements for the implementation of packet-switched connections, some of the network elements, however, being shared by both systems.

A centre 100 represents a mobile services switching centre (MSC) and a serving GPRS support node (SGSN) enabling circuit-switched and 25 packet switched signalling, respectively, in the radio system.

The core network may have a gateway unit 102, which represents a gateway mobile service switching centre (GMSC) and a gateway GPRS support node. The GMSC attends to the circuit-switched connections between the core network and external networks, such as a public land mobile network 30 (PLMN) or a public switched telephone network (PSTN), and the GGSN attends to the packet-switched connections between the core network and external networks such as the Internet.

The centre 100 controls a radio access network (RAN) 104, which 35 may comprise at least one base station controller 106 controlling at least one base station 108. The base station controller 106 may also be called a radio

network controller and the base station may be called a node B. A subscriber terminal 110 communicates with at least one base station 108 over a radio interface.

The radio server 112, which is an important part of the present solution, may be connected to the centre 100, but it may also be connected to the gateway 102 or to some part of the RAN 104. In some applications, the radio server 112 may communicate with the radio system over a radio interface in the same manner as the subscriber terminal 110.

Telecommunication systems are explained in further detail in the standards and literature of the field.

Figure 2 shows an example of an embodiment of how a wireless telecommunication system and a broadcasting system are connected together for performing a media system for transmitting parallel information related to a broadcast media stream, such as a radio program. Regarding the parallel channel, the media system may comprise the following elements: a broadcast system 200, a content creation tool 202, a server 112, the network 104 of a wireless telecommunication system and the subscriber terminal 110. The broadcast system 200 of a broadcast station uses a digital content management system to run a broadcast, such as an FM transmission, an AM transmission or a digital radio or television transmission. The broadcast system 200 broadcasts TV or radio programs.

The content creation tool 202, which may also be called a visual radio tool, is used to create parallel channel content presentation to be displayed on subscriber terminals. The content creation tool 202 typically locates in the radio or television station and it may be integrated into the broadcast system 200.

The server 112 provides the users with the content related to the broadcast based on their current parallel channel selection. The server 112 controls the content flow to and from the subscriber terminals. It facilitates a timed delivery of the content to the subscriber terminal, as well as the collecting and forwarding of interaction results to the radio station. The server controls the number of users. If necessary, the server limits the number of users using the parallel channel at the same time. The server also takes care of content adaptation for different application platforms in various subscriber terminals.

A radio access network (RAN) 104 provides the connection to the subscriber terminals via a wireless telecommunication network. The subscriber terminal may be a mobile phone, a palm computer or a laptop, for instance. The details of the radio access network and subscriber terminals may 5 vary according to the manufacturer and the used wireless telecommunication standard applied.

Figure 3 is a flow chart depicting a preferred embodiment of a method for collecting information on the audience of a broadcast media stream. An embodiment of the method uses a visual radio application in the 10 subscriber terminal, a visual radio server and a content creation tool, which will be discussed later in this application. The method is suitable for obtaining information on the audience of a radio or TV program for example to poll audience opinions in relation to a broadcast (programs or advertisements), to create interactive advertising and other interactive events, such as voting and 15 quizzes, or to keep record of the number of the audience in general. The radio station is able to observe the development of an on-line audience almost real time, obtain statistical information on the audience and arrange interactive polls, competitions, etc.

The method begins in block 300. In block 302 a telecommunication 20 system and a broadcasting system are connected together for performing a media system for transmitting parallel information related to a broadcast media stream. The media system is depicted in more detail in Figures 2 and 4A-C. The parallel information (also called the parallel channel content) typically comprises one or more parallel information objects (text strings, graphic file objects, animations, video clips, etc) and instructions for displaying the objects 25 (positions of objects, timing, etc.).

In block 304 a media stream is broadcast on at least one broadcast channel of the broadcast system. Nowadays, the broadcast system of a broadcast station typically uses a digital content management system to run a broadcast, such as an FM transmission, an AM transmission, or a digital radio or 30 television transmission. Programs including advertisements and breaks for ad hoc presentations are stored beforehand and the digital content management system runs the programs under the control of an editor.

In block 306 parallel information which is associated and synchronized 35 with the media stream of at least one broadcast channel is transmitted using the media system. The parallel information is transmitted on a parallel

channel. There may also be several parallel channels. The process regarding the creating and transmitting of the parallel information will be discussed in further detail later in this application. Briefly, the parallel information is created using the broadcast system, the content creation tool and the visual radio 5 server and then sent to the user via a radio telecommunication network. The parallel information is usually transmitted as a packet transmission.

In block 308 the audience is connected to the media system either as passive users or active users, the active users receiving the parallel information and the passive users not receiving the parallel information. In other 10 words, the term active refers to users who are actively receiving the content updates delivered by the radio server, i.e. these users are in a flow mode. Passive users are users who are not receiving the content updates, and may or may not be using the service at a particular moment. The audience has preferably an interactive connection to the media stream system via an interactive 15 menu shown on the screen of their user terminals. The users who have the terminal application running, and are viewing the (delivered parallel channel) content on the screen are active users. The users who have the application running but do not receive the content are passive. A user might not receive /see the content due to multiple reasons: the application is minimized or run in 20 a background, another application is running on the screen foreground and application has no display screen, screen saver is on, the application is running but a user is doing something else which prevents him seeing the parallel channel (i.e. browsing some other content). The application should report changes in the state to the server.

25 In block 310 information on the audience connected to the media system is collected. This is done by using the parallel channel as a feedback channel. If the system comprises several parallel channels, it is possible to use one channel as a forward channel and another as a feedback channel, for instance. The information may relate to active users and/or passive users. The 30 state of parallel information reception (active or passive) of a user terminal is reported to the server to provide on-line information on the number of active and/or passive users. The server collects the information and maintains a database of the statistics. In addition, the information may relate to polling audience opinions in relation to broadcasts (programs or advertisements). Information 35 may be collected from advertising, votes and quizzes, etc. For interactive advertising, the number of responses received from the audience is collected.

The templates for the screen menu of a subscriber terminal may be ready-made, in which case they are stored in a user terminal and modified according to the parallel information. The templates may also be transmitted as parallel information.

- 5        In an embodiment of the method, the subscriber terminal reports to the radio server when the application mode, that is the parallel information reception state, changes. Only users in the flow mode (active users) are assumed to be able to view the current content, whereas other (passive users) may be listening to the broadcast but are not actively following the information  
10      10 on the parallel channel. When a user is in the flow mode, content delivered from the server is updated automatically on the terminal screen according to the timing definition. The application may be switched to the background or to the initiating communication off-mode or a screen saver may be turned on, preventing the user from viewing the current content updates. These users are  
15      15 called passive users.

The events to be reported to the server are, for instance: an application start, i.e. a currently selected radio station is reported to the server, an application end, i.e. a pause in the reception of a parallel channel and or a change of a mode of the application is reported (for instance from a pause  
20      20 state to a resume state), and an application poll, i.e. a response to a query sent by the server is reported. The server may also update its information periodically.

The visual radio application may be instructed to send a response to the server when the user starts an interactive connection by pressing a virtual button on the screen. The response to be sent is defined separately for each button on the screen by the content creation tool. The timing of the changes in the general appearance of the screen may be defined to match a particular event in the broadcast, such as a song, an advertisement or a competition.  
25      25

30        The subscriber terminal may have an identifier that is sent to the server with an event report. This identifier may be a terminal-specific identifier or derived from one, e.g. IMSI or MSISDN, or created by the server as a response to a terminal request and stored by the terminal between sessions (similar to the cookie mechanism in the Internet). This makes it possible to obtain information on a particular subscriber terminal. An interactive event, such  
35      35

as a quiz, may also have an identifier that enables connecting answers to the corresponding interactive event and performing statistics.

In block 312 the collected information is processed in a predetermined way, for example statistically. The information may also be shown on the screen of a user terminal or a broadcaster's terminal. Templates for showing the collected information may be made and stored in a terminal in advance. The ready-made templates can be modified according to the parallel information. If the templates do not require too much transmission capacity, they can also be transmitted entirely as a parallel information.

10 In an embodiment, the server maintains a database for subscriber terminal event reports and uses the database to create graphics of statistical information, which are shown in a subscriber terminal using a content creation tool. The graphics may be automatically updated when new information becomes available or created as a response to a query. Many kinds of information views may be shown on the basis of events reported from subscriber terminals: the number of current users, current active users and current passive users. The number of current users is increased when an application start-message is reported and decreased when an application end -message is reported. The number of current active users is increased when an application 15 start or an application resume -message is reported and decreased when an application pause or an application end -message is reported. The number of current passive users is increased when an application pause is reported and decreased when an application resume is reported. It should be noticed that application polling and periodic reporting can be used to refresh the numbers 20 at any time.

When it comes to the interactive advertising, the number of responses received from the audience is collected. When an interactive screen containing different options is delivered to subscriber terminals, graphics and/or other corresponding information (options, images, etc.) are initialised. 25 Each time an interactive response is reported from a subscriber terminal as a selection preformed by the user, the number of the option is increased in the database of the server. The share of the audience participating in the action in question can be given as a percentage of selected options compared with the number of active users, for instance. The information in the database of the 30 server can be saved for later use to enable long-term analysis of the data.

A couple of examples of utilising the information gathered from the audience are: the collected information may be used for searching for good hours, geographical areas and/or modes for advertising; the best time to advertise is, of course, the time when the amount of the audience is biggest. The 5 type of the audience is also important and this is why the user profiles are important. The geographical areas are interesting, when the advertiser wants to aim his advertising to a particular area, its neighbourhood, for instance. It is also possible to improve the mode of advertising by using polls.

Because each event reported from a subscriber terminal contains 10 an identifier, it is possible to use the database for a statistical analysis. One example is the forming of listening profiles, for example the number of times a user returns to the station during a predetermined period of time.

If the user identifier is compared to demographic statistics or other comparable information on the user, the database can also be used for more 15 specific analysis of user groups and segments in real time.

The method ends in block 314. An arrow 316 depicts one possibility for repeating the method.

It should be noticed that it is possible to collect location information 20 on the audience. For this purpose, a user terminal may send information on its location or there may be a separate database comprising location information. By using location information it is possible to observe the amount of audience 25 in a particular location.

Next, an example of an embodiment of the method for collecting information on the audience of a broadcast media stream is discussed. Although 25 this embodiment is described with reference to a radio broadcast systems. The invention can be applied to other broadcast systems as well.

The transmitting of parallel information associated and synchronized with the media stream of at least one broadcasting channel comprises two main phases: creating parallel information and transmitting it.

30 The parallel information is created as follows: a radio station creates a parallel information definition message by using the content creation tool 202. The creating of the parallel information definition message requires information such as user options, a displayed prompt text, a screen layout, a parallel information identifier and timing information. The content creation tool 202 35 sends the parallel information definition message to the server 112. The server 112 searches for a corresponding parallel information object in the database.

The server 112 transmits the parallel information object usually as a packet transmission to the connected terminals 110. The parallel information object is saved in the memory of a subscriber terminal 110 for later use, or it is shown immediately. The server 112 may modify the parallel information object by defining terminal-specific parameters, such as virtual button sizes and positioning on the screen of the subscriber terminal and/or graphics according to the requirement of the subscriber terminal in question. The parallel information is shown on the screen of the subscriber terminal in synchronization with the broadcast.

Information on active users is collected as follows: a user answers to a poll, quiz or the like, by selecting an option shown on the screen by pressing a virtual button. The answer, and together with it, the user identification and/or the parallel information identifier are communicated to the server 112.

The information can be processed in several ways. For example, the server 112 aggregates the number of the answers corresponding to the answer in question.

The content creation tool periodically inquires the server to get updated statistics. The updated statistics are read from the database of the server 112 and sent to the content creation tool 202 which updates its display in such a way that the current situation can be seen. The content creation tool 202 is in this example the terminal of the broadcaster.

Figures 4A-B depict more details of the broadcast system, the server and the content creation tool. The shown functional structures are examples and it is obvious for a person skilled in the art that the broadcast system, the server and the content creation tool can be implemented in several ways.

The broadcast system is shown in Figure 4A. The broadcast system 200 comprises a timing information module 404, a dynamic content delivery module 402 and a user interface 406. Timing information is used to synchronize transmissions of the broadcast channel and the parallel channel. It is communicated to the server 112 by the timing information module 404. The timing information module 404 provides information on the starting time and ending time of a particular program, as well as the timing of advertising breaks etc. The length of broadcast advertisements and similar breaks can be deduced, for example, from the show's run time at the starting time of the break.

The dynamic content delivery module 402 can feed additional content information to a content structure tool 416 and a content packaging module 414 included in the content creation tool 202 and, finally, to a content delivery engine 410 in the server 112. The additional content information from the 5 dynamic content delivery module 402 can be, for example, results of events arranged in the broadcast, such as the name of a winner in a quiz show. When the additional content information is determined during the program, for example, during live events, a sports coverage or in a broadcast radio, the additional content information is communicated to the content packaging module 414 in 10 the content creation tool to dynamically create additional content items of the parallel information.

In addition, the dynamic content delivery engine module 402 may receive interaction results from an interaction engine 412 located in the server 112 through a feedback module 418 in the content creation tool 202 and to be 15 used as a part of the broadcast, for example to display the results of a vote on the TV as a video overlay.

A user interface 406 controls and adjusts by the broadcasting personnel the parallel channel timing with respect to the broadcast media stream. For example, signalling in the parallel channel may be paused and resumed to 20 stop and resume the playing of the parallel channel. These control events are communicated through a synchronization engine 408 located in the server 112 to the subscriber terminal 110, which then adjusts parallel channel timing accordingly.

The broadcast content delivery module 400 supplies the broadcast 25 to a broadcast receiver, such as an FM radio receiver, a TV set, or the like. The receiver may be situated in the subscriber terminal.

The feedback module 418 of the content creation tool 202, the interaction engine 412 and the memory 420 of the server 112 process the interaction results and create a suitable presentation to be shown to the broadcasting personnel or to the receivers of the broadcast.

The server is shown in Figure 4B. The server 112 provides the users with content related to the broadcast based on their current parallel channel selection. The server controls the flow of the parallel information content to and from the subscriber terminal. It facilitates the synchronized delivery of content to the subscriber terminal as well as the collecting and forwarding of interaction results to the radio station. The server controls the number of users. If 35

necessary, the server limits the number of users using the parallel channel at the same time. The server also takes care of content adaptation for different application platforms in various subscriber terminals.

To enable statistics on both currently active and passive users to be  
5 complied, the subscriber terminal 110 reports to the server 112 when the application mode, that is the parallel information reception state, changes. Only users in a flow mode (active users) are assumed to be able to view the current content, whereas other (passive users) may be listening to the broadcast but are not actively observing the parallel channel. When a user is in the flow  
10 mode, content delivered from the server is updated automatically on the terminal screen according to the timing definition. The application may be switched to the background, to the initiating communication off-mode or a screen saver may be activated, preventing the user from viewing the current content updates of the parallel information.

15 The synchronization engine 408 receives the starting time and the advertising break information from the timing information module 404 of the broadcast system 200. In addition, the synchronization engine 408 provides the means for subscriber terminals to synchronize their clocks with broadcast system time references by running a synchronization algorithm with the server.

20 The content delivery engine 410 delivers a signal with the content package created by the content packaging module 414 of the content creation tool to the content delivery engine 410 in the server. The signal is fed from the content delivery engine 410 to the interaction engine 412 in the server which sends the signal through the network 104 to the subscriber terminal 110 as  
25 parallel information. A subscriber-terminal-specific variant of the content can be delivered, which contains graphics objects optimised to the capabilities and the screen size of each subscriber terminal. A content package, including object identifications or other content items, may correspond to an entire program and be delivered before the program starts. The content can alternatively be  
30 delivered in a single package that contains both the subscriber terminal software module in a suitable format, such as a Java MIDlet and the content package for a particular show. This is suitable for recorded shows and programs, where the content and content timeline are known beforehand. In that case, dynamic content can be delivered in addition to the content package to take  
35 care of variation in the content during the broadcast.

Alternatively, the content can be delivered dynamically in content blocks, one block corresponding to a segment of a program. This approach is suitable for FM radio for example, where several songs to be played and different kinds of breaks such as advertising breaks are usually decided in advance.

If a user answers to a poll, for instance by selecting an option shown on the screen by pressing the virtual button in question, the user identification and/or the parallel information identifier are communicated together with the answer to the interaction engine 412 of the server. The server aggregates number of the answers relating to the poll. Therefore, the server also comprises a memory 420, where identifiers and answers are stored. A memory record may be composed of a parallel information identifier, typically a number, for associating answers with the corresponding poll, advertisement etc, and the number of selections of each option, for example, and/or the memory record may be composed of a user identifier for forming a user profile.

The content creation tool 202 may periodically request the server 112 to give updated statistics. The updated statistics are read from the database and sent to the content creation tool 202, which updates its display in such a way that the current situation can be seen by a broadcaster.

If the responses are in text format, the radio server saves the responses in text format. The content creation tool then receives the responses in the text format and they are shown on the display as such.

The server 112 maintains a database in a memory 420 for subscriber terminal event reports and uses the database to create graphics of statistical information, which are shown on a subscriber terminal (or on a broadcaster's terminal using a content creation tool 202). The graphics can be updated automatically when new information becomes available or created in response to a query.

Because each event reported from a subscriber terminal contains an identifier, it is possible to use the database for analysing of user profiles, for example the number of times the user returns to the station during a predetermined period of time.

If the user identifier is compared to demographic statistics or other comparable information on the user, the database can also be used for a more specific analysis of user groups and segments in real time.

The content creation tool is shown in Figure 4C. The content creation tool 202, which may also be called a visual radio tool in many applications, is used to create the parallel channel content (or a parallel information object) presentation to be displayed on the subscriber terminal. The content creation  
5 tool can be used to poll audience opinions relating to broadcasts (programs or advertisements), to create interactive advertising and other interactions, such as votes and quizzes. The content creation tool is also used to monitor the compiled statistics on the server and to create or modify the outer appearance of the display of a subscriber terminal. It is also used to create the content of  
10 the parallel channel for collecting user responses. The parallel channel acts as a feedback channel for user responses sent back from subscriber terminals.

The content creation tool is typically located in the radio or television station and the content creation tool may be integrated into the broadcast system 200. A content structure tool 416 creates timing for displaying parallel  
15 channel content associated with a broadcast media stream in time (for example, to show this parallel channel object on the screen of the subscriber terminal at 14:43:02 after the beginning of the program). Responses that are sent to the server 112 in response to the user interaction can be fed to the feedback module 418 located in the content creation tool.

20 The content structure tool 416 defines the layouts for displaying the parallel information objects, such as the sizes and positions of the objects on the screen of the subscriber terminal.

The content packaging module 414 is used to create a content package i.e. the format in which the parallel information is delivered to the subscriber terminal 110, including instructions for displaying the information (positions of objects, timing, etc.), as well as the content to be displayed, which usually consist of one or more parallel information objects (text strings, graphic file objects, animations, video clips, etc).

Generally, the content creation tool allows the radio station to create  
30 a visual presentation and manage the content flow shown on the screen of the subscriber terminal in synchronization with the broadcast. In addition, the content creation tool allows the station to manage interactive elements, such as delivery and purchase of objects, votings and quizzes.

Additionally, it is possible to utilise location information on the audience.  
35 This is typically done by compiling location information in the server which then communicates the information to the content creation tool. The con-

tent creation tool visualises by using a map the amount of the audience in a particular area, for instance. The information can be used for profiling the audience, designing advertising, for instance. The user terminal may send information on its location or there may be a separate database comprising location  
5 information. Typically, it is not required to follow a particular audience member but to see the amount of audience in a determined area.

Figure 5 shows a simplified example of a subscriber terminal whereto the embodiment of the invention can be applied. The terminal may be a mobile telephone or a microcomputer, for example, without being restricted  
10 thereto.

In the subscriber terminal, the media system provides an integrated user experience, allowing the user to start both listening to a broadcast and receiving the content relating to the broadcast on the parallel channel. The operation of the media system is based on two channels, the broadcast channel  
15 and the parallel channel. The media system, on the other hand, provides a visual and interactive parallel channel functionality, such as receiving and displaying content objects and reporting user interactions to a server.

The terminal comprises an antenna 500 with which signals are both transmitted and received via a duplex filter. A terminal may also comprise a  
20 broadcast receiver 518 such as a TV or a radio tuner, a video streaming engine, etc. for receiving for example radio or TV programs, with which case there is a need for a broadcast receiver antenna. These antennas may be integrated or separate antennas.

The terminal further comprises a transmitter for a wireless telecommunication system 502, to amplify and transmit a modulated signal to the antenna, a modulator 504 modulating the carrier wave by a data signal comprising the desired information in accordance with a selected modulation method, a receiver 506 which amplifies the signal supplied from the antenna and down-converts the signal to a selected intermediate frequency or directly to baseband, and a demodulator 508 demodulating the received signal to enable a data signal to be separated from the carrier wave.  
25

The subscriber terminal also comprises a controller block 516 comprising, for example, control and calculation means for controlling the operation of the different parts of the terminal, means for processing the speech of the  
30 user or the data generated by the user, such as a digital signal processing (DSP) processor comprising, for example, channel correction functions com-

pensating for interference in the signal caused by the radio channel by utilising information on the channel obtained from a known training sequence, A/D converters converting an analogue signal into a digital one by sampling and quantizing the baseband signal, D/A converters converting a digital signal to an 5 analogue one by a reverse method, filters at the receiver which filter frequencies outside a desired frequency band or, which in band-restricted systems restrict the band width of the output at the transmitter, and coding and decoding means for both channel and speech coding.

Furthermore, in spread-spectrum systems, such as WCDMA, the 10 spectrum of the signal is spread at the transmitter by means of a pseudo-random spreading code over a wide band and despread at the receiver, in an attempt to increase channel capacity. The control block also comprises means for arranging the signal to be transmitted and the signalling information to conform to the air interface standard of the cellular radio system used.

15 The user interface of the terminal comprises a loudspeaker or an earpiece 510, a microphone 512, a display 520 and possibly a keypad and/or a joystick or a similar device. The user interface devices communicate with the control block.

20 The terminal also comprises several different memory elements that are shown as one functional block 514. The parallel information delivered to the subscriber terminal from the server interaction engine 412 may be stored in the local memory 514.

25 The content structures (the layouts and other display instructions for displaying the parallel information objects typically performed on a slide basis, where the slide means one screen of information in the subscriber terminal) are separated from the parallel information and saved to the content structure 30 memory 834. The content structure also comprises possible templates. The content objects (for example, texts and figures to be shown on the screen), in other words the parallel information objects are also separated and saved to the content object memory 532. The separation and saving can be performed as a background process, whereby the required information is always available to a content processor 522 and a rendering engine 524 when needed. The rendering engine 524 forms visual and acoustic effects. Default information 35 can also be stored in the local memory to be shown in case dynamic content cannot be delivered to the subscriber terminal in time.

The initiation of the parallel channel can be made in several ways. The user can select an operation which causes the subscriber terminal to receive and display the information from the parallel channel. If the subscriber terminal includes a receiver for the broadcast channel, the user can select a 5 suitable broadcast channel and the subscriber terminal may automatically initiate the reception and display of the parallel channel, instead of manual initiation.

When a parallel channel software operation is initiated in the subscriber terminal, the subscriber terminal may transmit information about itself to 10 the server 112 and the server informs the subscriber terminal of the media stream. With the information on the subscriber terminal, a specific variant of the content can be delivered, which contains graphics objects optimised to the capabilities and the screen size of each subscriber terminal.

A timer controller module 528 establishes a connection to the 15 server. The timer controller module 528 runs a synchronization algorithm to synchronize an internal clock of the subscriber terminal with the time in the server. A simple synchronization algorithm can be used, based on calculating round trip delays of requests sent to the server from the subscriber terminal and calculating the difference between the subscriber terminal clock and the 20 server clock. Once the subscriber terminal has performed the synchronization and the starting time of a program is known, media stream timeline references can be translated to corresponding references in the internal clock of the subscriber terminal. The parallel information can be shown to the user in synchronization with the broadcast.

25 The timer controller 528 determines whether the program has already started and what is the current timeline position. If the program is running, the timer controller 528 can automatically find the correct content item in the parallel channel to be displayed in the display of the subscriber terminal.

Once the software of the subscriber terminal is activated and the 30 subscriber terminal has received parallel information to be shown, the content processor 522 starts executing. The processor reads the content structure in the content structure memory 534 for determining the current content to be displayed and communicates the content structure to the rendering engine 524. Based on the content structure, the content processor 522 informs the 35 timer controller 528 to trigger proceeding in the parallel channel according to the content structure. Then the content processor 522 is initiated again to dis-

play the next parallel information object (content item). The processor 522 reads another content structure in the content structure memory 532, determines the next parallel information object and possible layouts and sends them to the display 520.

- 5        The subscriber terminal sends an action report message to the server, when a change in the parallel information channel state is triggered or a user answers to a poll, etc. The events to be reported to the radio server are, for instance: an application start (active state), i.e. a currently selected radio station is reported to the server, an application end, i.e. an application pause is  
10      reported when the mode of application changes (active/passive), an application poll, i.e. a response to a query sent by the server is reported and a periodic reporting.

A signal having information on the action is communicated to the content processor 522. The action may be a report on a change in the parallel  
15      information reception state or on a user activity such as an answer to a quiz, for example. The content processor then analyses the action and triggers a transaction as defined by the content structure of the action. The user activity automatically triggers communication from the subscriber terminal 110 to the server 112 and thus the user does not need to know a long list of service numbers,  
20      service codes or identification strings. The signal of the user action is communicated from the content processor to the interaction engine 526 of the subscriber terminal, which transmits the signal through the network to the interaction engine 412 of the server using the parallel channel as a feedback channel.

- 25      A subscriber terminal may have an identifier that is sent to the server with an event report. This identifier can be a terminal-specific identifier or derived from one, e.g. IMSI or MSISDN, or created by the server in response to a terminal request and stored by the terminal between sessions (similar to the cookie mechanism in the Internet). This makes it possible to obtain information on a particular subscriber terminal. An interactive event, such  
30      as a quiz, may also have an identifier that enables connecting answers to the corresponding interactive event and compiling statistics.

Blocks 522, 524, 526 and 528 required for the parallel channel communication may be situated in a specific software module. This module can be implemented using an operating system, such as Symbian, or a programming environment, such as Java MIDP.

After the parallel channel software module in the terminal is initiated, the module is informed of the broadcast and/or the program the user is interested to follow. The user can also make the selection by using another terminal software module, such as a program guide delivered to the terminal over a 5 browser interface.

Even though the invention is described above with reference to an example according to the accompanying drawings, it is clear that the invention is not restricted thereto but it can be modified in several ways within the scope of the appended claims.

**Claims**

1. A method for collecting information on an audience of a broadcast media stream, characterized by
  - (302) connecting a radio telecommunication system and a broadcast system to perform a media system ,
  - (304) broadcasting a media stream on at least one broadcast channel of the broadcast system,
  - (306) transmitting parallel information on at least one parallel channel which parallel information is associated and synchronized with the media stream of at least one broadcast channel,
  - (308) connecting the audience to the media system as passive users or active users, the active users receiving the parallel information and the passive users not receiving the parallel information,
  - (310) collecting information on the audience connected to the media system, the information being on active users and/or passive users,
  - (312) processing the collected information in a predetermined way.
2. The method of claim 1, characterized by the audience having an interactive connection to the media stream system via an interactive menu shown on the screen of a user terminal.
3. The method of claim 1, characterized by collecting the information on the audience in a memory.
4. The method of claim 1, characterized by the collected information being shown on the screen of a user terminal and/or a broadcaster's terminal.
5. The method of any preceding claim, characterized by templates for the interactive menu or showing the collected information being ready-made, stored in a user terminal and being modified according to the parallel information.
6. The method of any preceding claim, characterized by templates for the visual menu or for displaying of the compiled information being transmitted as parallel information.
7. The method of claim 1, characterized by collecting the information on the active users by using an interactive menu on the screen of a user terminal comprising options to be selected and by using the parallel channel as a feedback channel for transmitting the user selections.

8. The method of claim 1, characterized by the parallel information being transmitted as a packet transmission.

9. The method of claim 1, characterized by collecting location information on the audience.

5 10. The method of claim 1, characterized by using the collected information for searching for good times, geographical areas and/or modes for advertising.

11. A media system for collecting information on the audience of a broadcast media stream, characterized by comprising:

10 means (200) for broadcasting a media stream on at least one broadcast channel of the broadcast system, the broadcast system being part of the media system,

15 means (104, 112, 202) for transmitting parallel information on at least one parallel channel which parallel information is associated and synchronized with the media stream of at least one broadcasting channel using a radio telecommunication system of the media system,

20 means (104, 110, 112, 202) for connecting the audience to the media system as passive users or active users, the active users receiving the parallel information and the passive users not receiving the parallel information,

means (104, 110, 112, 202) for collecting information on the audience connected to the media system, the information relating to active users and/or passive users,

25 means (112, 202) for processing the collected information in a predetermined way.

12. The system of claim 11, characterized by further comprising an interactive menu shown on the screen of a user terminal (110) for connecting the audience via an interactive connection to the media stream system.

30 13. The media system of claim 11, characterized by further comprising means (420) for collecting the information on the audience in a memory.

14. The media system of claim 11, characterized by further comprising means (104, 110, 112, 200, 202) for showing the collected information on the screen of a user terminal and/or of a broadcaster's terminal.

15. The media system of claim 11, characterized by further comprising means (104, 110, 112, 200, 202) for storing ready-made templates for the interactive menu or showing the collected information and modifying them according to the parallel information.

5 16. The media system of claim 11, characterized by further comprising means (104, 112, 200, 202) for transmitting the templates for the visual menu or showing the collected information as parallel information.

10 17. The media system of claim 11, characterized by further comprising means (104, 110, 112, 200, 202) for collecting information on active users by using an interactive menu on the screen of a user terminal comprising options to be selected and by using the parallel channel as a feedback channel for transmitting the user selections.

15 18. The media system of claim 11, characterized by further comprising means (104, 110, 112, 200, 202) for transmitting the parallel information as a packet transmission.

19. The media system of claim 11 characterized by further comprising means (104, 110, 112) for collecting location information on the audience.

20. A user terminal for collecting information on an audience of a media stream broadcast by a media system characterized by comprising:

25 means (500, 506, 508, 514, 516, 520, 522, 524, 526, 528) for receiving parallel information on at least one parallel channel which parallel information is associated and synchronized with the media stream of at least one broadcast channel of the broadcast system, the broadcast system being a part of the media system,

30 means (500, 502, 504, 516, 520, 522, 524, 526) for connecting the audience to the media system as passive users or active users, the active users receiving the parallel information and the passive users not receiving the parallel information,

means (500, 502, 504, 516, 520, 522, 524, 526) for changing a parallel information reception state according to the user's selections,

35 means (500, 502, 504, 516, 520, 522, 524, 526, 528) for transmitting selections made by active users for collecting information on the audience connected to the media system,

means (500, 506, 508, 514, 516, 520, 522, 524, 526, 528) for showing the collected information.

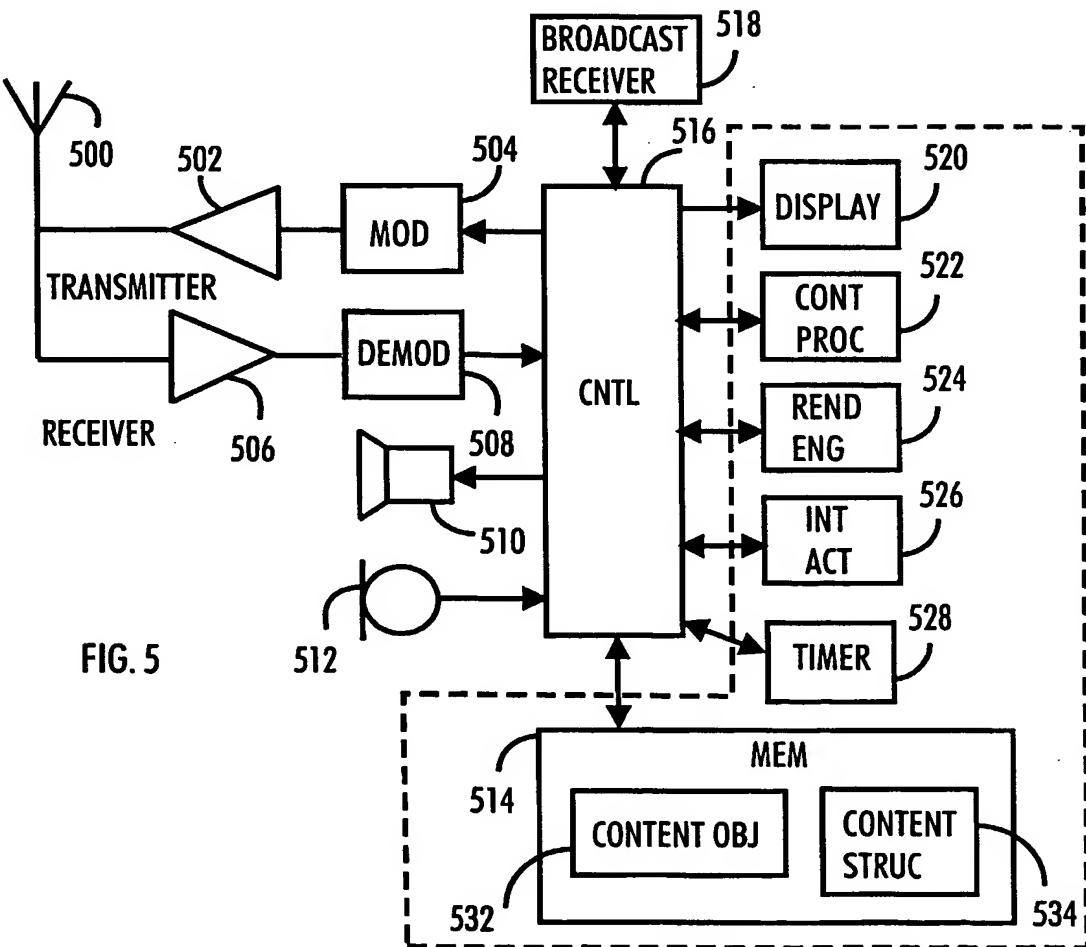
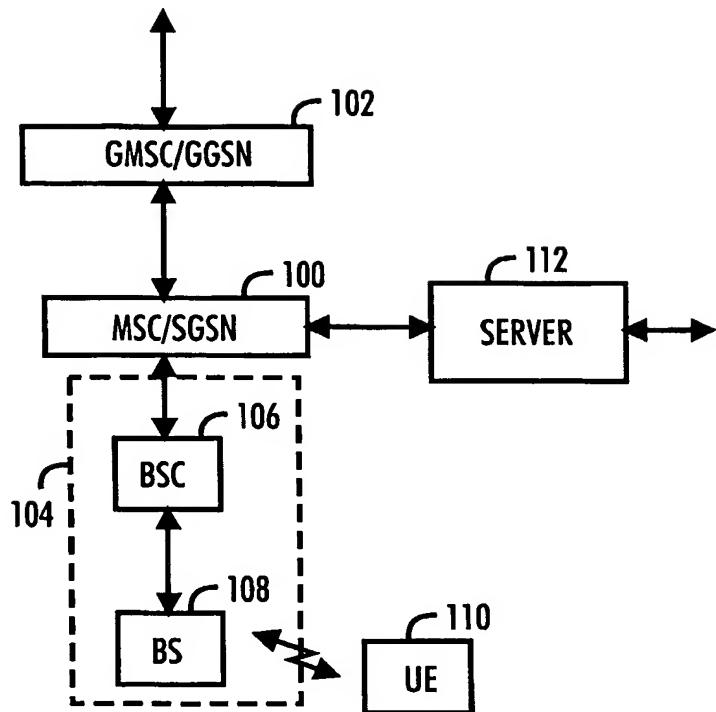
21. The user terminal of claim 20, characterized by further comprising means (520) for the audience to have an interactive connection to  
5 the media stream system via an interactive menu.

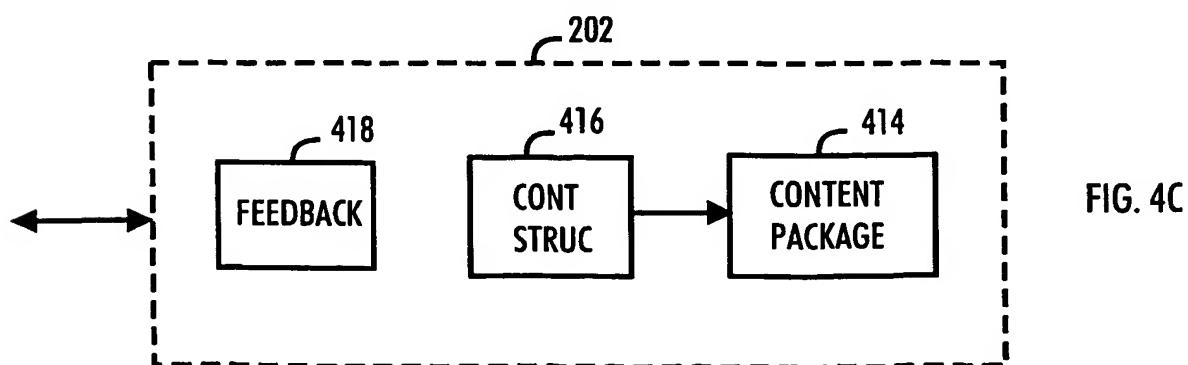
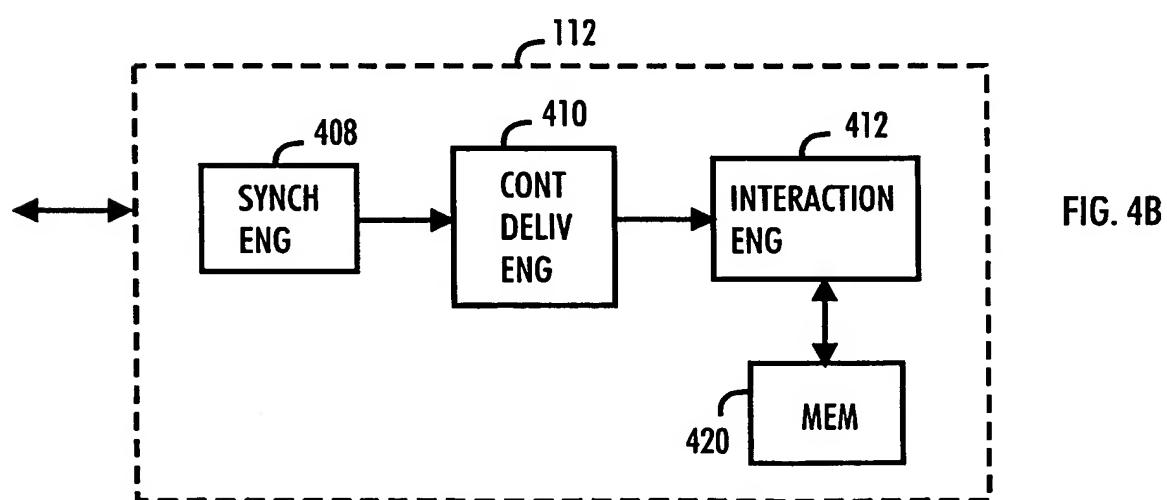
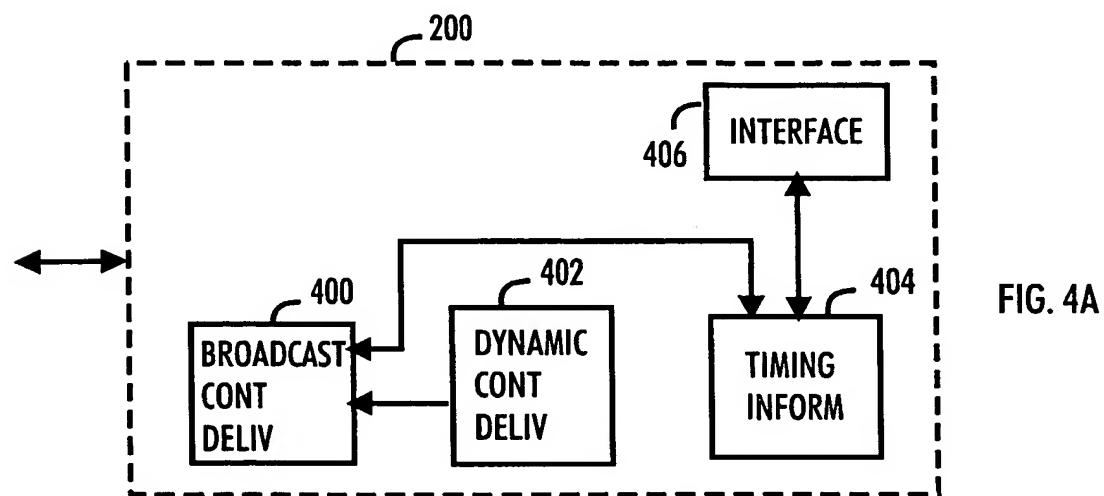
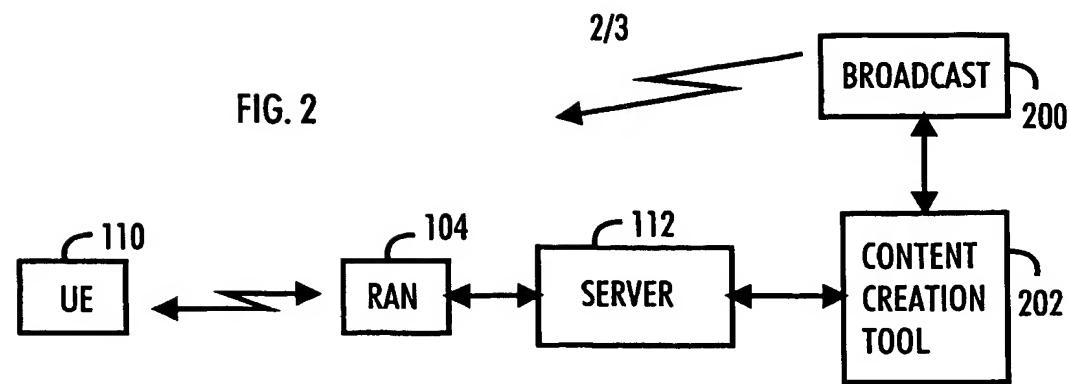
22. The user terminal of claim 20, characterized by further comprising means (520) for active users to make their selections by using a virtual menu on the screen of a user terminal comprising options to be selected.

10 23. The user terminal of claim 20, characterized by further comprising means (500, 502, 504, 506, 508, 516, 520, 522, 524, 526) for transmitting and receiving parallel information as a packet transmission.

15 24. The user terminal of claim 20, characterized by further comprising means (500, 502, 504, 506, 508, 516, 520, 522, 524, 526) for collecting information on active users by using an interactive menu on the screen of a user terminal comprising options to be selected and by using the parallel channel for transmitting the user selections.

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3/3

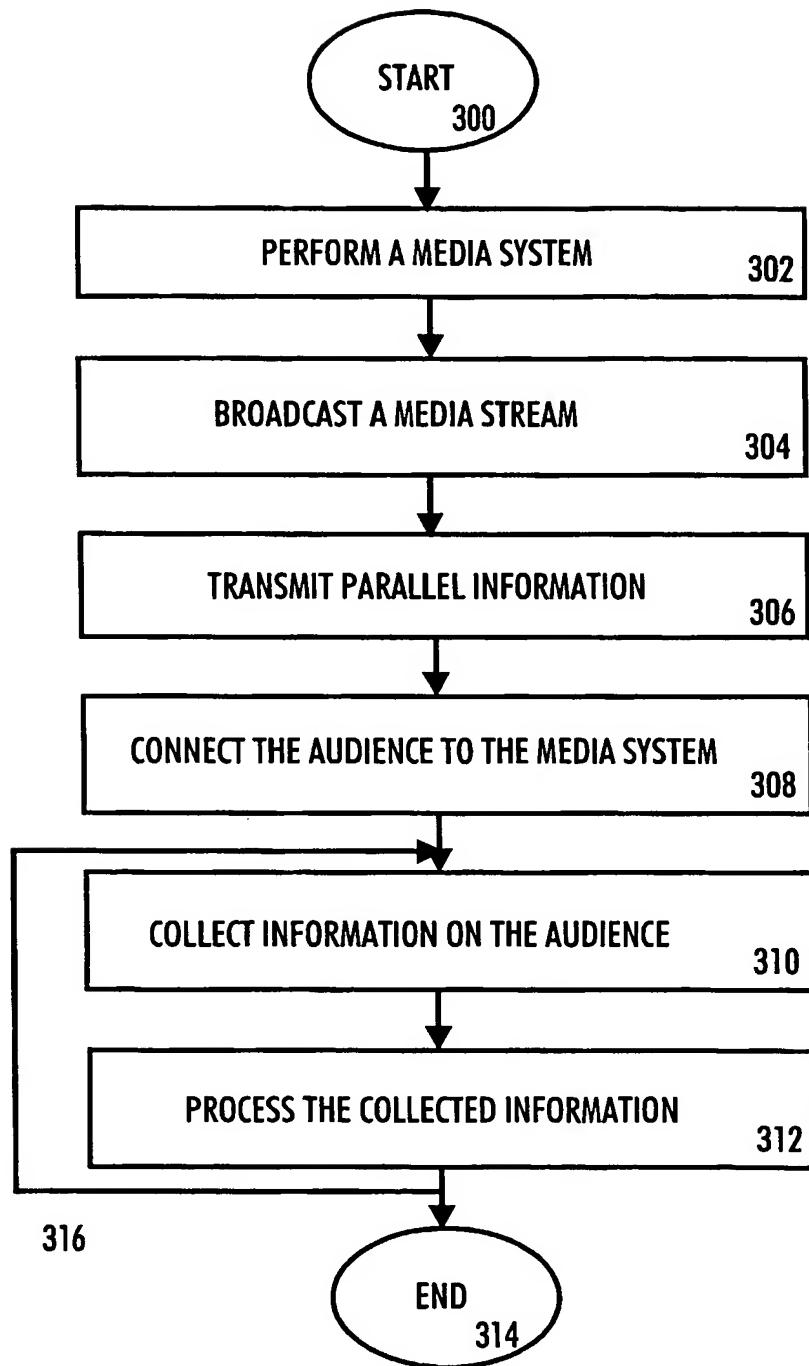


FIG. 3

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/FI 03/00288

## A. CLASSIFICATION OF SUBJECT MATTER

**IPC7: H04Q 7/00**

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

**IPC7: H04Q, G06F, H04L**

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

**SE,DK,FI,NO classes as above**

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 0199411 A1 (MINERVA NETWORKS, INC.), 27 December 2001 (27.12.01), figures 3A, 1B, 2A, abstract  --	1-24
A	EP 1096743 A1 (LUCENT TECHNOLOGIES INC.), 2 May 2001 (02.05.01), see paragraphs [0011] - [0018], [0030] - [0037]  --	1-24
A	WO 9935839 A1 (INTEL CORPORATION), 15 July 1999 (15.07.99), figure 7, abstract  -----	1-24

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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Date of the actual completion of the international search

10 July 2003

Date of mailing of the international search report

15 -07- 2003

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

29/06/03

International application No.

PCT/FI 03/00288

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 0199411 A1	27/12/01	AU CN	6810701 A 1386362 T	02/01/02 18/12/02
EP 1096743 A1	02/05/01	NONE		
WO 9935839 A1	15/07/99	AU EP JP TW US	1833999 A 1053641 A 2002501346 T 404134 B 6072521 A	26/07/99 22/11/00 15/01/02 00/00/00 06/06/00



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International Application No. } PCT/IB02/02537  
Demande internationale n° }

International Filing Date } 01 July 2002  
Date du dépôt international } (01.07.02)

Geneva/Genève,  
05 May 2003  
(05.05.03)

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REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

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PCT / 1B 0 2 / 0 25 3 7

International Application No.

0 1 JULY 2002 (01.07.02)  
International Filing Date

INTERNATIONAL BUREAU OF WIPO

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference  
(if desired) (12 characters maximum) 99000104/CHE

Box No. I TITLE OF INVENTION

A system and method for delivering representative media objects of a broadcast media stream to a mobile terminal

Box No. II APPLICANT

This person is also inventor

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

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Telephone No.

Faxsimile No.

Teleprinter No.

Applicant's registration No. with the Office

State (that is, country) of nationality:  
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State (that is, country) of residence:  
Finland

This person is applicant for the purposes of:  all designated States  all designated States except the United States of America  the United States of America only  the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

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This person is:

applicant only

applicant and inventor

inventor only (If this check-box is marked, do not fill in below.)

Applicant's registration No. with the Office

State (that is, country) of nationality:  
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State (that is, country) of residence:  
Finland

This person is applicant for the purposes of:  all designated States  all designated States except the United States of America  the United States of America only  the States indicated in the Supplemental Box

Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent international Authorities as:

agent

common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

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Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

( 12.09.02 )

**PCT****REQUEST**

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

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PCT / IB 02 / 02537

International Application No.

01 JULY 2002

International Filing Date

( 01.07.02 )

INTERNATIONAL BUREAU OF WIPO

PCT International Application

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference  
(if desired) (12 characters maximum) 99000104/CHE**Box No. I TITLE OF INVENTION**

A system and method for delivering representative media objects of a broadcast media stream to a terminal

**Box No. II APPLICANT** This person is also inventor

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

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Finland

Telephone No.

Facsimile No.

Teleprinter No.

Applicant's registration No. with the Office

State (that is, country) of nationality:  
FinlandState (that is, country) of residence:  
Finland

This person is applicant for the purposes of:  all designated States  all designated States except the United States of America  the United States of America only  the States indicated in the Supplemental Box

**Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)**

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

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State (that is, country) of nationality:  
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This person is applicant for the purposes of:  all designated States  all designated States except the United States of America  the United States of America only  the States indicated in the Supplemental Box

Further applicants and/or (further) inventors are indicated on a continuation sheet.

**Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE**

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

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Sheet No. ... 2...

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Finland

This person is:

- applicant only  
 applicant and inventor  
 inventor only (If this check-box is marked, do not fill in below.)

Applicant's registration No. with the Office

State (that is, country) of nationality:  
FinlandState (that is, country) of residence:  
Finland

This person is applicant for the purposes of:  all designated States  all designated States except the United States of America  the United States of America only  the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

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FIN-03250 Ojakkala  
Finland

This person is:

- applicant only  
 applicant and inventor  
 inventor only (If this check-box is marked, do not fill in below.)

Applicant's registration No. with the Office

State (that is, country) of nationality:  
FinlandState (that is, country) of residence:  
Finland

This person is applicant for the purposes of:  all designated States  all designated States except the United States of America  the United States of America only  the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:  all designated States  all designated States except the United States of America  the United States of America only  the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:  all designated States  all designated States except the United States of America  the United States of America only  the States indicated in the Supplemental Box

Further applicants and/or (further) inventors are indicated on another continuation sheet.

Sheet No. . . .3...

**Box No. V DESIGNATION OF STATES**

*Mark the applicable check-boxes below; at least one must be marked.*

The following designations are hereby made under Rule 4.9(a):

Regional Patent

- AP ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, MZ Mozambique, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZM Zambia, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT (*if other kind of protection or treatment desired, specify on dotted line*) .....

EA Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT

EP European Patent: AT Austria, BE Belgium, BG Bulgaria, CH & LI Switzerland and Liechtenstein, CY Cyprus, CZ Czech Republic, DE Germany, DK Denmark, EE Estonia, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, SK Slovakia, TR Turkey, and any other State which is a Contracting State of the European Patent Convention and of the PCT

OA OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GQ Equatorial Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (*if other kind of protection or treatment desired, specify on dotted line*) .....

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- |   |   |   |
|---|---|---|
| <input checked="" type="checkbox"/> AE United Arab Emirates .....               | <input type="checkbox"/> GM Gambia .....                                    | <input type="checkbox"/> NZ New Zealand .....                 |
| <input checked="" type="checkbox"/> AG Antigua and Barbuda .....                | <input type="checkbox"/> HR Croatia .....                                   | <input type="checkbox"/> OM Oman .....                        |
| <input checked="" type="checkbox"/> AL Albania .....                            | <input type="checkbox"/> HU Hungary .....                                   | <input type="checkbox"/> PH Philippines .....                 |
| <input checked="" type="checkbox"/> AM Armenia .....                            | <input type="checkbox"/> ID Indonesia .....                                 | <input type="checkbox"/> PL Poland .....                      |
| <input checked="" type="checkbox"/> AT Austria .....                            | <input type="checkbox"/> IL Israel .....                                    | <input type="checkbox"/> PT Portugal .....                    |
| <input checked="" type="checkbox"/> AU Australia .....                          | <input type="checkbox"/> IN India .....                                     | <input type="checkbox"/> RO Romania .....                     |
| <input checked="" type="checkbox"/> AZ Azerbaijan .....                         | <input type="checkbox"/> IS Iceland .....                                   | <input type="checkbox"/> RU Russian Federation .....          |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina .....             | <input type="checkbox"/> JP Japan .....                                     |   |
| <input checked="" type="checkbox"/> BB Barbados .....                           | <input type="checkbox"/> KE Kenya .....                                     | <input type="checkbox"/> SD Sudan .....                       |
| <input checked="" type="checkbox"/> BG Bulgaria .....                           | <input type="checkbox"/> KG Kyrgyzstan .....                                | <input type="checkbox"/> SE Sweden .....                      |
| <input checked="" type="checkbox"/> BR Brazil .....                             | <input type="checkbox"/> KP Democratic People's Republic of Korea .....     | <input type="checkbox"/> SG Singapore .....                   |
| <input checked="" type="checkbox"/> BY Belarus .....                            | <input type="checkbox"/> KR Republic of Korea .....                         | <input type="checkbox"/> SI Slovenia .....                    |
| <input checked="" type="checkbox"/> BZ Belize .....                             | <input type="checkbox"/> KZ Kazakhstan .....                                | <input type="checkbox"/> SK Slovakia .....                    |
| <input checked="" type="checkbox"/> CA Canada .....                             | <input type="checkbox"/> LC Saint Lucia .....                               | <input type="checkbox"/> SL Sierra Leone .....                |
| <input checked="" type="checkbox"/> CH & LI Switzerland and Liechtenstein ..... | <input type="checkbox"/> LK Sri Lanka .....                                 | <input type="checkbox"/> TJ Tajikistan .....                  |
| <input checked="" type="checkbox"/> CN China .....                              | <input type="checkbox"/> LR Liberia .....                                   | <input type="checkbox"/> TM Turkmenistan .....                |
| <input checked="" type="checkbox"/> CO Colombia .....                           | <input type="checkbox"/> LS Lesotho .....                                   | <input type="checkbox"/> TN Tunisia .....                     |
| <input checked="" type="checkbox"/> CR Costa Rica .....                         | <input type="checkbox"/> LT Lithuania .....                                 | <input type="checkbox"/> TR Turkey .....                      |
| <input checked="" type="checkbox"/> CU Cuba .....                               | <input type="checkbox"/> LU Luxembourg .....                                | <input type="checkbox"/> TT Trinidad and Tobago .....         |
| <input checked="" type="checkbox"/> CZ Czech Republic .....                     | <input type="checkbox"/> LV Latvia .....                                    | <input type="checkbox"/> TZ United Republic of Tanzania ..... |
| <input checked="" type="checkbox"/> DE Germany .....                            | <input type="checkbox"/> MA Morocco .....                                   | <input type="checkbox"/> UA Ukraine .....                     |
| <input checked="" type="checkbox"/> DK Denmark .....                            | <input type="checkbox"/> MD Republic of Moldova .....                       | <input type="checkbox"/> UG Uganda .....                      |
| <input checked="" type="checkbox"/> DM Dominica .....                           |   | <input type="checkbox"/> US United States of America .....    |
| <input checked="" type="checkbox"/> DZ Algeria .....                            | <input type="checkbox"/> MG Madagascar .....                                |   |
| <input checked="" type="checkbox"/> EC Ecuador .....                            | <input type="checkbox"/> MK The former Yugoslav Republic of Macedonia ..... | <input type="checkbox"/> UZ Uzbekistan .....                  |
| <input checked="" type="checkbox"/> EE Estonia .....                            | <input type="checkbox"/> MN Mongolia .....                                  | <input type="checkbox"/> VN Viet Nam .....                    |
| <input checked="" type="checkbox"/> ES Spain .....                              | <input type="checkbox"/> MW Malawi .....                                    | <input type="checkbox"/> YU Yugoslavia .....                  |
| <input checked="" type="checkbox"/> FI Finland .....                            | <input type="checkbox"/> MX Mexico .....                                    | <input type="checkbox"/> ZA South Africa .....                |
| <input checked="" type="checkbox"/> GB United Kingdom .....                     | <input type="checkbox"/> MZ Mozambique .....                                | <input type="checkbox"/> ZM Zambia .....                      |
| <input checked="" type="checkbox"/> GD Grenada .....                            | <input type="checkbox"/> NO Norway .....                                    | <input type="checkbox"/> ZW Zimbabwe .....                    |
| <input checked="" type="checkbox"/> GE Georgia .....                            |   |   |
| <input checked="" type="checkbox"/> GH Ghana .....                              |   |   |

**Check-boxes below reserved for designating States which have become party to the PCT after issuance of this sheet:**

□ ..... □ ..... □ .....

**Precautionary Designation Statement:** In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)

Sheet No. ... 4 ...

**Box No. VI PRIORITY CLAIM**

The priority of the following earlier application(s) is hereby claimed:

Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application: regional Office	international application: receiving Office
item (1)				
item (2)				
item (3)				
item (4)				
item (5)				

 Further priority claims are indicated in the Supplemental Box.

The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (*only if the earlier application was filed with the Office which for the purposes of this international application is the receiving Office*) identified above as:

all items     item (1)     item (2)     item (3)     item (4)     item (5)     other, see  
Supplemental Box

\* Where the earlier application is an ARIPO application, indicate at least one country party to the Paris Convention for the Protection of Industrial Property or one Member of the World Trade Organization for which that earlier application was filed (Rule 4.10(b)(ii)):

**Box No. VII INTERNATIONAL SEARCHING AUTHORITY**

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA / EP

Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year)	Number	Country (or regional Office)
-----------------------	--------	------------------------------

**Box No. VIII DECLARATIONS**

The following declarations are contained in Boxes Nos. VIII (i) to (v) (mark the applicable check-boxes below and indicate in the right column the number of each type of declaration):

Number of declarations

<input type="checkbox"/> Box No. VIII (i)	Declaration as to the identity of the inventor	:	
<input checked="" type="checkbox"/> Box No. VIII (ii)	Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent	:	1
<input type="checkbox"/> Box No. VIII (iii)	Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application	:	
<input checked="" type="checkbox"/> Box No. VIII (iv)	Declaration of inventorship (only for the purposes of the designation of the United States of America)	:	1
<input type="checkbox"/> Box No. VIII (v)	Declaration as to non-prejudicial disclosures or exceptions to lack of novelty	:	

Sheet No. . . 5 . .

**Box No. VIII (ii) DECLARATION: ENTITLEMENT TO APPLY FOR AND BE GRANTED A PATENT**

The declaration must conform to the standardized wording provided for in Section 212; see Notes to Boxes Nos. VIII, VIII (i) to (iv) (in general) and the specific Notes to Box No. VIII (ii). If this Box is not used, this sheet should not be included in the request.

Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent (Rules 4.17(ii) and 51bis.1(a)(ii)), in a case where the declaration under Rule 4.17(iv) is not appropriate:

in relation to the present international patent application

NOKIA CORPORATION is entitled to apply for and be granted a patent by virtue of the following:

(ii) NOKIA CORPORATION is entitled as employer of the inventors, Mikko Mäkipää, Akseli Anttila and Toni Kopra.

(ix) this designation is made for the purposes of:

(a) all designations [except the designation of the United States of America]

This declaration is continued on the following sheet, "Continuation of Box No. VIII (ii)".

Sheet No. 6 . . . .

**Box No. VIII (iv) DECLARATION: INVENTORSHIP** (only for the purposes of the designation of the United States of America)  
*The declaration must conform to the following standardized wording provided for in Section 214; see Notes to Boxes Nos. VIII, VIII (i) to (v) (in general) and the specific Notes to Box No. VIII (iv). If this Box is not used, this sheet should not be included in the request.*

**Declaration of Inventorship (Rules 4.17(iv) and 51bis.1(a)(iv))  
for the purposes of the designation of the United States of America:**

I hereby declare that I am the original, first and sole (if only one inventor is listed below) or joint (if more than one inventor is listed below) inventor of the subject matter which is claimed and for which a patent is sought.

This declaration is directed to the international application of which it forms a part (if filing declaration with application).

This declaration is directed to international application No. PCT/..... (if furnishing declaration pursuant to Rule 26ter).

I hereby declare that my residence, mailing address, and citizenship are as stated next to my name.

I hereby state that I have reviewed and understand the contents of the above-identified international application, including the claims of said application. I have identified in the request of said application, in compliance with PCT Rule 4.16, any claim to foreign priority, and I have identified below, under the heading "Prior Applications," by application number, country or Member of the World Trade Organization, day, month and year of filing, any application for a patent or inventor's certificate filed in a country other than the United States of America, including any PCT international application designating at least one country other than the United States of America, having a filing date before that of the application on which foreign priority is claimed.

Prior Applications: .....

I hereby acknowledge the duty to disclose information that is known by me to be material to patentability as defined by 37 C.F.R. § 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the PCT international filing date of the continuation-in-part application.

I hereby declare that all statements made hereby of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name: Mikko Mäkipää .....

Residence: Helsinki, Finland .....

(city and either US state, if applicable, or country)

Mailing Address: Airoranta 9 A .....

FIN-00830 Helsinki .....

Citizenship: FIN .....

Inventor's Signature: .....

(if not contained in the request, or if declaration is corrected or added under Rule 26ter after the filing of the international application. The signature must be that of the inventor, not that of the agent)

Date: .....

(of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)

Name: Akseli Anttila .....

Residence: Helsinki, Finland .....

(city and either US state, if applicable, or country)

Mailing Address: Pajalahdentie 6 B 25 .....

FIN-00200 Helsinki .....

Citizenship: FIN .....

Inventor's Signature: .....

(if not contained in the request, or if declaration is corrected or added under Rule 26ter after the filing of the international application. The signature must be that of the inventor, not that of the agent)

Date: .....

(of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)

This declaration is continued on the following sheet, "Continuation of Box No. VIII (iv)".

Sheet No. ... 7 ...

**Continuation of Box No. VIII (i) to (v) DECLARATION**

If the space is insufficient in any of Boxes Nos. VIII (i) to (v) to furnish all the information, including in the case where more than two inventors are to be named in Box No. VIII (iv), in such case, write "Continuation of Box No. VIII ..." (indicate the item number of the Box) and furnish the information in the same manner as required for the purposes of the Box in which the space was insufficient. If additional space is needed in respect of two or more declarations, a separate continuation box must be used for each such declaration. If this Box is not used, this sheet should not be included in the request.

**Continuation of Box No. VIII (iv)**

Name: Toni Kopra

Residence: Ojakkala, Finland

Mailing address: Sääritie 11 B 6, FIN-03250 Ojakkala

Citizenship: FIN

Inventor's signature: \_\_\_\_\_

Date: \_\_\_\_\_

Sheet No. 8

## Box No. IX CHECK LIST; LANGUAGE OF FILING

This international application contains: (a) the following number of sheets in paper form: request (including declaration sheets) : 8 description (excluding sequence listing part) : 22 claims : 8 abstract : 1 drawings : 4 Sub-total number of sheets : 43  sequence listing part of description (actual number of sheets if filed in paper form, whether or not also filed in computer readable form; see (b) below) : _____ Total number of sheets : 43  (b) sequence listing part of description filed in computer readable form (i) <input type="checkbox"/> only (under Section 801(a)(i)) (ii) <input type="checkbox"/> in addition to being filed in paper form (under Section 801(a)(ii))  Type and number of carriers (diskette, CD-ROM, CD-R or other) on which the sequence listing part is contained (additional copies to be indicated under item 9(ii), in right column): _____	This international application is accompanied by the following item(s) (mark the applicable check-boxes below and indicate in right column the number of each item): 1. <input checked="" type="checkbox"/> fee calculation sheet : 1 2. <input type="checkbox"/> original separate power of attorney : 3. <input type="checkbox"/> original general power of attorney : 4. <input checked="" type="checkbox"/> copy of general power of attorney; reference number, if any: 02/0021 : 1 5. <input type="checkbox"/> statement explaining lack of signature : 6. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s): 7. <input type="checkbox"/> translation of international application into (language): 8. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material : 9. <input type="checkbox"/> sequence listing in computer readable form (indicate also type and number of carriers (diskette, CD-ROM, CD-R or other)) (i) <input type="checkbox"/> copy submitted for the purposes of international search under Rule 13ter only (and not as part of the international application) : (ii) <input type="checkbox"/> (only where check-box (b)(i) or (b)(ii) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Rule 13ter : (iii) <input type="checkbox"/> together with relevant statement as to the identity of the copy or copies with the sequence listing part mentioned in left column : 10. <input type="checkbox"/> other (specify): _____	Number of items
Figure of the drawings which should accompany the abstract:	Language of filing of the international application: English	

## Box No. X SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

*Note to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).*

1 July 2002

  
 Christian Hauge  
 AWAPATENT A/S

For receiving Office use only		
1. Date of actual receipt of the purported international application:	01 JULY 2002	(01.07.02)
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
4. Date of timely receipt of the required corrections under PCT Article 11(2):		
5. International Searching Authority (if two or more are competent): ISA / 	6. <input checked="" type="checkbox"/> Transmittal of search copy delayed until search fee is paid	
For International Bureau use only		
Date of receipt of the record copy by the International Bureau:		

2. Drawings:
- received:  
 not received:

Date of receipt of the record copy by the International Bureau:

A SYSTEM AND METHOD FOR DELIVERING REPRESENTATIVE MEDIA  
OBJECTS OF A BROADCAST MEDIA STREAM TO A TERMINAL

Field of invention

- 5 This invention relates to a system and method for delivering media objects associated with a broadcasted media stream to one or more terminals.

Background of invention

10 Media streams such as a radio or television transmissions, videos, or DVDs are generally controlled and presented by a communication system such as a radio or television receiver, a video recorder or DVD player. A user may control the presentation of the media stream by directly operating the communication device so as to select a particular media stream or particular sequence of the particular media stream. The known media streams and known communication devices are satisfactory in the presentation of a media stream in a sequential fashion. However, when it comes to commercial utilisation of the media stream the known communication systems may be further improved in order to serve multi-technical communication systems, i.e. combinations of communication systems, and to fulfil future customer demands for versatility of their communication devices and media stream products.

Summary of the invention

An object of the present invention is to provide a system and method for providing media objects of a media stream, which media objects are created for and made available to a user of a communication system during a primary media stream experience.

5

A further object of the present invention is to capture a frame of a media stream of a broadcast or video transmission to a terminal.

10 A particular advantage of the present invention is provision of editing capability for editing a frame of a media stream so as to personalise the frame.

15 A particular feature of the present invention relates to the provision of a "capture of the moment" or "record" hot key in a terminal enabling a user to download a frame from a plurality of frames of a media stream.

20 The above objects, advantage and feature together with numerous further objects, advantages and features, which will be evident from below detailed description, is accomplished by a solution in accordance to a first aspect of the present invention by a system for delivering a media object to one or more terminals, which media object is associated with a media stream  
25 broadcasted to one or more media stream receivers, said system comprising:

- (a) a broadcasting network for connecting to said one or more media stream receivers;
- (b) a first communications network for connecting to said one or more terminals; and
- (c) a communication device connecting to said broadcasting network and broadcasting said media stream to said one or more media stream receivers, and connecting to said

communications network and communicating said media object to said one or more terminals.

The term "one or more" should in this context be construed as  
5 a, an, at least one, at least a single.

The media stream according to the first aspect of the present invention may comprise a television and/or radio transmitted show, drama, movie, sports game, news, or any combination  
10 thereof. Thus any type of television and/or radio transmission may constitute a media stream.

In addition, the media object may comprise a text, a picture, a series of pictures, a video, a series of videos, an audio  
15 recording, a series of audio recordings, or any combination thereof. Hence the media object may comprise any related or unrelated information in regards to the media stream and may be presented in any type of readable format.

20 The terminal according to the first aspect of the present invention may comprise a phone, a cellular or mobile phone, a personal computer, a television, a set top box, a multimedia terminal, a personal office assistant or any combination thereof, and the one or more media stream receivers may  
25 comprise a set top box, multimedia terminal, television receiver, television, radio receiver or any combination thereof.

The communication device according to the first aspect of the present invention may broadcast to the one or more media stream receivers by a cable television network, a satellite television network, a radio frequency television network, a telephone network, a powerline network, a radio network or any

combination thereof. Thus any type of network may generally be applied for broadcasting of the media stream, i.e. various types of providers capable of transmitting the media stream to the receivers may be used. This provides for a system, which is  
5 very versatile.

The communication device according to the first aspect of the present invention may be adapted to transmit digitally coded communication such as digital video broadcasting and/or digital  
10 audio broadcasting. The digitally coded signals provide better transmission quality and enables the communication device to forward additional information to a receiver.

The first communications network according to the first aspect of the present invention may comprise a telephone wire network, a cable television network, a powerline network, a computer network, a wireless telephone network, or any combination thereof. The communication between the communication device and the one or more terminals may utilise a wide variety of network types  
20 and wide variety of combinations of network types depending upon which provider is selected.

The communication device according to the first aspect of the present invention may comprise a broadcasting unit for broadcasting the media stream to the one or more media stream receivers, a management unit for providing the media object to the one or more terminals, and a second communications network for interconnecting the broadcasting unit and the management unit. The broadcasting unit may comprise a marker for  
25 generating a media stream identification tag associated to the media stream, which media stream identification tag may comprise information regarding duration of the media stream, lapsed time of the media stream, broadcasting schedule for the  
30

media stream, broadcasting channel for the media steam, or any combination thereof. By tagging the media stream with an identification mark any specific media objects relating to the media stream may be connected to the media stream in the communication device so as to provide a tool for managing the media objects.

Further, the broadcasting unit may be adapted to perform a continuous communication of data regarding the media stream information tag, an updating communication of revision of specific data regarding the media stream information tag, a communication based on schedule of the media stream, or any combination thereof. Any of the above reference communications are advantageous since they all serve a specific purpose.

Continuous communication enables the broadcast unit to continuously correct for changes in the broadcast scheduling of the media stream and to continuously create new media objects relating to the media stream. Updating communication similarly provides the broadcasting unit with the possibility to adjust for changes in the broadcast scheduling of the media stream. Finally, the scheduled communication such as predefining intervals in which the broadcast unit may communicate with the management unit provides a well structured and coordinated communication form.

The management unit according to the first aspect of the present invention may comprise an application program interface for receiving the media object, a database for storing the media object and the media stream identification tag, a real time publishing interface for enabling real time publishing of the media object, and a user interface for providing the one or more terminals access to select the media object stored in the database through the first communications network. The various

interfaces may be implemented in a plurality of format so as to support a wide range of communication standards.

The user interface may be adapted to respond to a request from  
5 the one or more terminals and to generate a media object list  
of media objects, which are accessible for the one or more  
terminals.

The second communications network according to the first aspect  
10 of the present invention may comprise local area network,  
metropolitan area network, wide area network, or inter-network  
such as the Internet, a dedicated communication line, or any  
combination thereof. The first aspect of the present invention  
may therefore be implemented for any particular network being  
15 wireless or hardwire.

The system according to the first aspect of the present  
invention may further comprise a billing unit for managing  
billing transactions for the one or more terminals' requests  
20 for the media object and for generating invoices to the one or  
more terminals in accordance with the billing transactions. The  
transactions may be recorded so as to present invoices to users  
of the system.

25 In addition, the system may further comprise a third  
communications network for interconnecting the billing unit and  
the management unit and a fourth communications network for  
interconnecting the billing unit and the one or more terminals.  
The third and fourth communications network comprises local  
30 area network, metropolitan area network, wide area network, or  
inter-network such as the Internet, a dedicated communication  
line, a telephone wire network, a cable television network, a  
powerline network, a computer network, a wireless telephone

network, or any combination thereof. As described above the network type is not limited since the system may be incorporating into any known network types.

- 5 The term broadcasting network is to be construed as a cable TV network, a satellite TV network, a radio frequency TV network, a radio cable or terrestrial network, and/or any TV or radio network utilising digital transmission techniques.
- 10 The communication device according to first aspect of the present invention may broadcast the media stream and the media object through the broadcasting network and the one or more media stream receivers may connect to the first communications network and communicate the media object to the one or more terminals. The media object may be broadcast through a digital television network as part of the media stream such as through super text TV. A digital receiver such as a set-top box may store the media objects and communicate them subsequently to the one or more terminals.
- 15
- 20 The above objects, advantages and features together with numerous further objects, advantages and features which will be evident from below detailed description is accomplished by a solution in accordance to a second aspect of the present invention by a method for delivering a media object to one or more terminals, which media object is associated with a media stream broadcasted to one or more media stream receivers, and said method comprising:
  - (a) associating said media object with said media stream by means of a communication device;
  - 25 (b) broadcasting said media stream to said one or more media stream receivers through a broadcasting network by means of said communication device; and
- 30

- (c) communicating said media object to a requesting terminal of said one or more terminals through a communications network by means of said communication device.
- 5 The method according to the second aspect of the present invention may further comprise defining a parameter for the media object by means of the communication device and the parameter defining a media object format such as audio, video, image, or any combination thereof, a technical format, an  
10 alternative task such as full view or close-up, a terminal requirement, or any combination thereof. By defining the parameter the method provides for an effective means for selecting those media objects which are readable to a specific terminal.
- 15 The method according to the second aspect of the present invention may further comprise packaging a set of media objects associated with the media stream and publishing the set of media objects to the one or more terminals by means of the  
20 communication device. The packaging may comprise linking the media object to the media stream so that the media object is attached to a broadcasting time line of the media stream and defining the availability of the media object in accordance with the broadcasting time line of the media stream. Obviously,  
25 some connection between the media stream and the media objects is required in order to manage a media object relative to a terminal and relative to a media stream.
- The packaging may further comprise defining a media object  
30 based on a key moment of the media stream as an elapsed time from the start of the media stream, defining the media object's availability prior, during and after broadcast of the media stream, defining an additional time period during which the

media object's availability is announced but not available for transfer, or any combination thereof. Any desired part of a media stream may be utilised for the creation of a media object associated with the media stream.

5

The method according to the second aspect of the present invention may further comprise managing the set of media objects by means of the communication device, and the managing comprises controlling availability of each media object of the 10 set of media objects in accordance with the broadcast time line for the media stream. The availability of the media object is controlled so as to provide a constant high level of current interest in the media objects. This motivates a user to further use the method for downloading more media objects.

15

The method according to the second aspect of the present invention may further comprise providing the one or more terminals access to the available media objects and enabling a requesting terminal of the one or more terminals to transfer 20 any specific available media object. The providing may comprise presenting a user interface to the one or more terminals, which user interface lists the set of media objects. The user of a terminal may thus select from a set of media objects associated with any particular media stream. The number of media objects 25 in a set may vary in accordance with the popularity of the media stream.

The method according to the second aspect of the present invention may further comprise generating a media object by 30 means of the communication device in response to a request from the one or more terminals. The request is accomplished by a user of a terminal depressing a hotkey for capturing a key moment of the media stream. The user interface presents a

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specific list for a specific terminal, which specific list comprises a media object, which is readable by the specific terminal. The user of a terminal may thus by depressing a button on his terminal initiate the creation of a media object 5 to a media screen. In this way the user may select any frame or sound he desires from the media stream.

The method according to the second aspect of the present invention may further comprise purchasing the media object from 10 the communication device by means of the one or more terminals, by purchasing the media object the media object is transferred to the one or more terminals. Since media streams may be subject to royalties the user of the method should be at least self supporting or part of a business.

15

The method according to the second aspect of the present invention may further comprise recording and processing of the transfer of the media object to the one or more terminals by means of a transaction processing device. Payment of the 20 utilised services may be monitored in a wide variety of ways thus the method opens the possibility for implementation in many circumstances.

The method according to the second aspect of the present invention may further comprise identifying the media object 25 format by means of the one or more terminals, the identifying revealing information such as supporting application needed, additional rights pertaining to the media object, forwarding limitations associated with the media object, or any 30 combination thereof.

The method according to the second aspect of the present invention may further comprise providing privileges associated

11

with the media object and with the one or more terminals. The privileges enable the one or more terminals to copy or forward the media object in accordance with each of the one or more terminals' number of purchases of said media object. In  
5 addition or alternatively, the may privileges disable the one or more terminals to copy or forward said media object. Further in addition or alternatively, the privileges may disable the one or more terminals to copy or forward more than the one or more terminals' number of purchases. It is important to monitor  
10 and restrict the user of the terminals in exploiting the media objects beyond the rights pertained thereto. Hence the method according to the second aspect of the present invention may ensure against this type of exploitation. The privileges may be incorporated in the system according to the first aspect of the  
15 present invention.

The method according to the second aspect of the present invention may further incorporate any features of the system according to the first aspect of the present invention.

20

#### Brief description of the drawings

The above, as well as additional objects, features and advantages of the present invention, will be better understood  
25 through the following illustrative and non-limiting detailed description of preferred embodiments of the present invention, with reference to the appended drawings, wherein:

Figure 1 shows a system according to a first embodiment of the  
30 present invention;

Figure 2 shows an example of the methodology used by the system according to the first embodiment of the present invention;

Figure 3 shows an overall view of key components of the system according to the first embodiment of the present invention; and

- 5 Figure 4 shows a flow chart of method according to a second embodiment of the present invention.

Detailed description of preferred embodiments

- 10 In the following description of the various embodiments, reference is made to the accompanying drawings which form a part hereof, and in which is shown by way of illustration various embodiments in which the invention may be practiced. It is to be understood that other embodiments may be utilized  
15 and structural and functional modifications may be made without departing from the scope of the present invention.

A communication system according to a first embodiment of the present invention is shown in figure 1 as designated in its  
20 entirety by reference numeral 10.

The communication system 10 enables a user of a terminal 12, such as a cell or mobile phone, during a media stream broadcast to capture a media object. A media object should in this  
25 context be construed as a frame of a media stream, a series of frames of a media stream, a video sequence of a media stream, a part of a sound track of a media stream, or any combination thereof.

- 30 The communication system 10 further comprises a display 14 for displaying a broadcasted media stream 16. The display 14 is communicating with a receiver 18, such as an external or internal digital set-top box, a digital receiver, or an

13

analogue receiver. The receiver 18 may in an alternative embodiment of the present invention further communicate with a video recorder, a DVD player, a radio receiver, a sound amplifier, or any combination thereof.

5

The media stream 16 is broadcasted through a broadcasting network such as a cable television network, a satellite television network, a terrestrial television network, a telephone network, a powerline network, a cable or terrestrial 10 radio network or any combination thereof.

The terminal 12 may comprise a hot key 20 enabling a user of the terminal 12 to select, by depressing the hot key 20, a media object 24 associated with the media stream 16. Thus, a 15 user of the terminal 12 watching a television show may during the show depress the hot key 20 and thereby request a media object to be transferred through a communications network, such as a wired or wireless telecommunication network. In addition, the user of the terminal 12 may select any part of the media 20 stream 16 such as any particular audio tracks from the media stream 16.

The communication system 10 enables turning existing mass media properties into further digital merchandise by utilising the 25 familiarity and appeal of characters, events and themes songs of particular television shows, movies or radio programs for media objects to be incorporated into a user's terminal 12.

The media object 24 is created as a representation of a 30 particular scene of a television show, however, the media object 24 may be any key moments of television shows, movies or radio programs such as high points of the plot line (Ross and Rachel's first kiss in the television series "friends"), a

14

clever punch line in a television show, a particular comment by a character in a movie or television show, a goal scored in any sports game. The media object 24 may be a video clip, a picture, a series of pictures, animations, soundtracks or the like.

The media object 24 when transferred onto the terminal 12 may be used as any personal terminal enhancement such as background images, ringing tones, messages, or logos. The terminal 12 comprises an editor for enabling a user of the terminal 12 to edit the media object 24 in accordance with any personal preferences. The terminal 12 further comprises a memory for storing of the media object 24 so that the user may further communicate the media object 24 per se or an edited version of the media object 24 to other terminals through a wireless telecommunications network and/or utilising a multimedia messaging service.

An example of the methodology is shown in figure 2. A communication system designated in its entirety by reference numeral 40 comprises a television set 42 having a monitor 44 and a receiver 46 and displaying a specific media stream 48, and comprises a communication device 47 for broadcasting the specific media stream to the receiver 46 and for providing media objects related to the specific media stream to any number of terminals.

A first user is watching the media stream 48 on the television set 42 and desires to transfer a media object 50 associated with the media stream 48 onto a first terminal 52, which transfer is shown as an arrow 54. The first user captures this media object 50 by using the first terminal 52 and pressing the "capture the moment" hot key 56. The first user may then want

15

- to share the media object 50 with a second user of a second terminal 58 and hence in accordance with a set of privileges associated with the first user communicate the media object 50 by utilising for example a multimedia messaging service (MMS),  
5 which communication is shown in figure 2 as an arrow 60. The second user of the second terminal 58 may subsequently be using the media object for example as a personal background on his/her terminal or in accordance with a set of privileges associated with the second user distribute it further by  
10 sending for example a new e-mail with the media object attached with the e-mail transmission.

The utilisation of the multimedia messaging service for forwarding or sharing the media object may be incorporated in  
15 the terminal as a application program presenting a menu enabling the user to activate a transfer of the media object. In addition, the application program may open a recipient window to be filled by the user of the terminal prior to activating a transfer of the media object and in this process  
20 offering the user the use of the address book of the terminal. Further, the application program may comprise a editing facility enabling the user of the terminal to edit in the media object prior to activating the transfer of the media object. The editing facility the user may add comments to the media  
25 objects. Furthermore, the application program may enable the introduction of an advertisement to be associated and forwarded with the media object. This renders it possible to have messages partly of fully financed by the advertiser who wants to sponsor the media object.

30

Both the first and second terminal 52 and 58 provide the first and second user with the possibility to edit the media object

50 so as to personalize a message in conjunction with the transmission of the media object from one terminal to the next.

Figure 3 shows an overall view of the key components of the communication system 10. The communication system 10 comprises a broadcast unit 80 for broadcasting a media stream to one or more television receivers in any given region 82. The broadcast of the media stream is shown as a first arrow 84 and may be accomplished by wireless, cable or satellite transmission. The region 82 may be defined by a cable television network or a plurality of individual television receivers.

The broadcast unit 80 comprises a marker 86 for continuously generating an associated media stream identification tag to a specific media stream to be aired on a specific transmission date and time. The tag may contain further information regarding duration of the specific media stream, lapsed time of the specific media stream and transmission channel.

The broadcast unit 80 communicates the associated media stream identification tag to a management unit 88 through a first communications network 90 such as local area network, metropolitan area network, wide area network, or inter-network such as the Internet, or alternatively on a dedicated line. The management unit 88 comprises an application program interface 92 for receiving one or more media objects 94 associated with specific media stream identification tags and connects to a database 96 for storing the one or more media objects 94 together with the associated media stream identification tag.

30

The broadcast unit 80 may perform a continuous transmission of data regarding a media stream information tag, an updating transmission of revision of specific data regarding a media

stream information tag, or a transmission based on a scheduled program listing.

Furthermore, the management unit 88 comprises a real time publishing interface 98 enabling real time publishing of media objects. That is, enabling publishing of the one or more media objects 94 during the broadcast unit's broadcast of an associated media stream.

- 5 10 In addition, the management unit 88 comprises an interface processor 100 for providing one or more terminals 102 access to the one or more media objects 94 stored in the database 96 through a wireless communications network 104. The interface processor 100 responds to a call from one or more of the
- 15 15 terminals 102 and generates a media object list of the one or more media objects that are accessible for the specific one or more terminals 102 at that specific date and time. The access of the one or more media objects 94 may thus be limited to a specific time period so as to create media objects which are
- 20 20 dependent on the transmission of a media stream.

The management unit 88 further communicates with a billing device 106 through a second communications network 108, which may be any of the above types mentioned with reference to the first communications network 90, it may in fact be the same communications network. The billing device 106 manages transactions of media objects, accounts of the one or more terminals 102, and generates invoices. The billing device 106 may further communicate with the one or more terminals 102 through a third communications network 110, which as before may be any of the above types mentioned with reference to the first and second communications network 90 and 108 in combination with a wireless communications network.

18

In an alternative embodiment of the management unit 88 communicates the media objects through the second communication network 90 to the broadcast unit 80, which communicates the media objects to the one or more television receivers or set-

- 5 top box in the region 82 together with the media stream. The media objects may be communicated as a super text TV object. The one or more television receivers communicate the media objects to the terminals through a wireless communications network 105.

10

Figure 4 shows a flow chart of a method according to a second embodiment of the present invention, which method is designated in its entirety by reference numeral 120. The method 120 comprises a start 122 for performing initialisation of the 15 method 120. The start 122 involves establishing an interface for media object generating devices, such as the broadcast unit 80 described with reference to figure 3, and an interface for a terminal, such as the one or more terminals 102 described with reference to figure 3.

20

The media object generating devices utilise a management unit, such as described with reference to figure 3 as the management unit 88, for establishing media objects 124 on or under the control of the management unit. The media object generating 25 devices use an original media stream content for creating the media objects associated with said original media stream. The media objects may be key frames or key sounds, which define a special moment of the media stream. The media objects are created prior to broadcasting the media stream, which 30 broadcasting may be performed one or more times in one or more regions or in one or more television network. However, the media objects may, in addition, be created during a broadcast of an associated media stream, for example during live sports

19

broadcasts, which enable a terminal to select representative frames of the media stream (sports broadcast) such as a goal scored during a soccer match.

- 5 The media objects may be implemented in any format such as in Synchronized Multimedia Integration Language (SMIL) format, any JPEG format, any Graphics Interchange Format (GIF), audio or digital audio formats, Audio IFF, Computer Graphics Metafile, TIFF, BIFF, bmp, Clear, FITS, NFF, OFF, PCX, PNG, TGA, XBM, 10 mod, any Moving Picture Experts Group (MPEG) format, Musical Instrument Digital Interface, PICT, PNG, Portable Document Format (PDF), Portable Network Graphics, Portable Pixmap, progressive coding, Quicktime, RIFF, Self Extracting Archive, sequential coding; server-parsed HTML, sprite, Tagged Image 15 File Format, targa, Targa Graphics Adaptor, thumbnail, wav, WebCGM, wireless bitmap, xpm or a different frame rate video.

In an alternative embodiment of the present invention the media objects are created automatically or semi-automatically.

20

- Defining the parameters 126 is achieved by the management unit. The parameters of the media objects may define media object type (audio, video or image), technical format (as described above e.g. JPEG), alternative tasks (full view, close-up), 25 terminal requirements (e.g. Nokia 6100 series). In addition, textual matter or preview versions may be included in the media objects.

- When the management unit has received all necessary information 30 regarding media objects associated with a specific media stream the management unit packages the media objects as a set of media objects during packaging 128. The packaging 128 comprises associating the media objects to a specific media stream so

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that each media object are attached to the time line of the media stream by defining the availability of the media object in accordance with the time line of the media stream. This may be achieved by defining the key moment as elapsed time for the 5 start of the media stream (e.g. media stream title, media object identification tag, and media object title - second goal), defining the media object's availability prior, during and after broadcast of the media stream, as well as defining an additional time period during which the availability of a media 10 object is announced but not available for transfer (e.g. advertised prior to broadcast).

When the packaging 128 is accomplished the management unit initiates a publishing 130 of the media object or the set of 15 media objects so that the media object or set of media objects are associated with the specific media stream.

During the media stream broadcast the management unit controls the availability of the media object or the set of media 20 objects by managing 132 availability in accordance with the pre-defined timing and the progression of the media stream broadcast, while taking in to account delays in the start of the broadcast and commercial breaks.

25 In conjunction with controlling availability of the media object or set of media objects the management unit enables one or more terminals to access the available media objects by providing 134 the requesting one or more terminals to transfer any particular available media object.

30

The providing step 134 further comprises presenting a user interface to the one or more terminals, which user interface lists the set of media objects, which may be generated by the

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managing device as a response to a request from the one or more terminals such as accomplished by a user of a terminal depressing a hotkey for capturing a media stream moment, as described with reference to figure 3. By depressing the hotkey

5 the user navigates to a web page or starts a particular application. The user interface presents a specific list for a specific terminal, which specific list comprises media objects, which are readable by said specific terminal. Hence the user interface is dynamic in relation to the one or more terminals.

10 For example, if the management unit knows that the specific terminal only supports PNG images the user interface does not present available GIF images.

Furthermore, the list may comprise presently unavailable media  
15 objects that will be available in the future and/or previously available media objects, which presently are unavailable. Alternatively, if only one media object is available at any time the user interface may direct the user to directly transfer the media object omitting listing alternatives.

20 The user/users of the one or more terminals are subsequently asked whether a purchase of a media object is requested during a purchase? step 136. The media object may have a price, which subsequently to the user transferring the media object is charged to the user. If the user does not wish to purchase a media object, the method 120 is terminated in termination step 138.

On the other hand if the user wishes to purchase a media object  
30 of the list of media objects the method 120 moves to transfer the chosen media object during a transfer step 140. When the chosen media object is transferred to the user the transaction is recorded and processed by a separate transaction processing

22

device such as the billing device as described with reference to figure 3. The transaction may be accomplished in a wide variety of ways such as micro-payment, charging against user account or operating billing.

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When the media object is transferred to the user's terminal it may be identified by the terminal by its format or supporting application (e.g. through MIME type mapping). This initial identification may further reveal which type of potential use is allowed. That is, additional rights and limitations may be attached to the media object (e.g. the user's ability to forward the media object to others may be limited). Hence, when a specific user of a terminal purchases a certain media object, which is transferred to the terminal, the media object includes privileges describing rights and limitations in use or copying of the media object.

Claims

1. A system for delivering a media object to one or more

5 terminals, which media object is associated with a media stream  
broadcasted to one or more media stream receivers, said system  
comprising:

(a) a broadcasting network for connecting to said one or  
more media stream receivers;

10 (b) a first communications network for connecting to said  
one or more terminals; and

(c) a communication device connecting to said broadcasting  
network and broadcasting said media stream to said one  
or more media stream receivers, and connecting to said  
15 communications network and communicating said media  
object to said one or more terminals.

2. A system according to claim 1, wherein said media stream

comprises a television and/or radio transmitted show, drama,

20 movie, sports game, news, or any combination thereof.

3. A system according to claims 1 or 2, wherein said media

object comprises a text, a picture, a series of pictures, a

video, a series of videos, an audio recording, a series of

25 audio recordings, or any combination thereof.

4. A system according to any of claims 1 to 3, wherein said

terminal comprises a phone, a cellular or mobile phone, a

personal computer, television, a set top box, a multimedia

30 terminal, a personal office assistant or any combination  
thereof.

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5. A system according to any of claims 1 to 4, wherein said one or more media stream receivers comprise a set top box, multimedia terminal, television receiver, television, radio receiver or any combination thereof.

5

6. A system according to any of claims 1 to 5, wherein said communication device broadcasts to said one or more media stream receivers by a cable television network, a satellite television network, a radio frequency television network, a telephone network, a powerline network, a radio network or any combination thereof.

10 7. A system according to claim 6, wherein said communication device is adapted to transmit digitally coded communication such as digital video broadcasting and/or digital audio broadcasting.

20 8. A system according to any of claims 1 to 7, wherein said first communications network comprises a telephone wire network, a cable television network, a powerline network, a computer network, a wireless telephone network, or any combination thereof.

25 9. A system according to any of claims 1 to 8, wherein said communication device comprising a broadcasting unit for broadcasting said media stream to said one or more media stream receivers, a management unit for providing said media object to said one or more terminals, and a second communications network for interconnecting said broadcasting unit and said management unit.

30 10. A system according to claim 9, wherein said broadcasting unit comprises a marker for generating a media stream

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identification tag associated to said media stream, which media stream identification tag comprises information regarding duration of said media stream, lapsed time of said media stream, broadcasting schedule for said media stream,  
5 broadcasting channel for said media stream, or any combination thereof.

11. A system according to claims 9 or 10, wherein said broadcasting unit is adapted to perform a continuous  
10 communication of data regarding said media stream information tag, an updating communication of revision of specific data regarding said media stream information tag, a communication based on schedule of said media stream, or any combination thereof.

15

12. A system according to any of claims 9 to 11, wherein said management unit comprises an application program interface for receiving said media object, a database for storing said media object and said media stream identification tag, a real time  
20 publishing interface for enabling real time publishing of said media object, and a user interface for providing said one or more terminals access to select said media object stored in said database through said first communications network.

25 13. A system according to claim 12, wherein said user interface is adapted to respond to a request from said one or more terminals and to generate a media object list of media objects, which are accessible for said one or more terminals.

30 14. A system according to any of claims 9 to 13, wherein said second communications network comprises local area network, metropolitan area network, wide area network, or inter-network

26

such as the Internet, a dedicated communication line, or any combination thereof.

15. A system according to any of claims 1 to 14 further comprises a billing unit for managing billing transactions for said one or more terminals' requests for said media object and for generating invoices to said one or more terminals in accordance with said billing transactions.
- 10 16. A system according to claim 17 further comprises a third communications network for interconnecting said billing unit and said management unit and a fourth communications network for interconnecting said billing unit and said one or more terminals.
- 15 17. A system according to claim 16, wherein said third and fourth communications network comprises local area network, metropolitan area network, wide area network, or inter-network such as the Internet, a dedicated communication line, a telephone wire network, a cable television network, a powerline network, a computer network, a wireless telephone network, or any combination thereof.
- 20 18. A system according to any of claims 1 to 17, wherein said communication device broadcasting said media stream and said media object through said broadcasting network and wherein said one or more media stream receivers connecting to said first communications network and communicating said media object to said one or more terminals.
- 25 30 19. A method for delivering a media object to one or more terminals, which media object is associated with a media stream

27

broadcasted to one or more media stream receivers, and said method comprising:

- (a) associating said media object with said media stream by means of a communication device;
- 5 (b) broadcasting said media stream to said one or more media stream receivers through a broadcasting network by means of said communication device; and
- (c) communicating said media object to a requesting terminal of said one or more terminals through a communications network by means of said communication device.

10 20. A method according to claim 19 further comprises defining a parameter for said media object by means of said communication device and said parameter defining a media object format such as audio, video, image, or any combination thereof, a technical format, an alternative task such as full view or close-up, a terminal requirement, or any combination thereof.

20 21. A method according to claims 19 or 20 further comprises packaging a set of media objects associated with said media stream and publishing said set of media objects to said one or more terminals by means of said communication device.

25 22. A method according to claim 21, wherein said packaging comprises linking said media object to said media stream so that said media object is attached to a broadcasting time line of said media stream and defining the availability of said media object in accordance with said broadcasting time line of 30 said media stream.

23. A method according to claims 21 or 22, wherein said packaging further comprises defining a media object based on a

key moment of said media stream as an elapsed time from the start of the media stream, defining the media object's availability prior, during and after broadcast of said media stream, defining an additional time period during which said media object's availability is announced but not available for transfer, or any combination thereof.

- 5 24. A method according to any of claims 19 to 23 further comprises managing said set of media objects by means of said communication device, and said managing comprises controlling availability of each media object of said set of media objects in accordance with said broadcast time line for said media stream.
- 10 15 25. A method according to claim 24 further comprises providing said one or more terminals access to said available media objects and enabling a requesting terminal of said one or more terminals to transfer any specific available media object.
- 20 26. A method according to claim 25, wherein said providing comprises presenting an interface to said one or more terminals, which interface lists said set of media objects.
- 25 27. A method according to any of claims 19 to 26 further comprises generating a media object by means of said communication device in response to a request from said one or more terminals.
- 30 28. A method according to claim 27, wherein said request is accomplished by a user of a terminal depressing a hotkey for capturing a key moment of said media stream.

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29. A method according to any of claims 26 to 28, wherein said interface presents a specific list for a specific terminal, which specific list comprises a media object, which is readable by said specific terminal.

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30. A method according to any of claims 19 to 29 further comprises purchasing said media object from said communication device by means of said one or more terminals, by purchasing said media object said media object is transferred to said one 10 or more terminals.

31. A method according to claim 30 further comprises recording and processing of said transfer of said media object to said one or more terminals by means of a transaction processing 15 device.

32. A method according to claims 30 or 31 further comprises identifying said media object format by means of said one or more terminals, said identifying revealing information such as 20 supporting application needed, additional rights pertaining to said media object, forwarding limitations associated with said media object, or any combination thereof.

33. A method according to any of claims 19 to 32, further comprising providing privileges associated with said media 25 object and with said one or more terminals, which privileges enable said one or more terminals to copy or forward said media object in accordance with each of said one or more terminals' number of purchases of said media object and/or which 30 privileges disable said one or more terminals to copy or forward said media object and/or which privileges disable said one or more terminals to copy or forward more than said one or more terminals' number of purchases.

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34. A method according to any of claims 19 to 33, wherein said method further incorporates any features of the system according to any claims 1 to 18.

5

Abstract

This invention relates to a system and method for delivering a media object associated with a media stream broadcasted from a communication device to a broadcast receiving unit such as a personal computer, a multimedia terminal, a television receiver, a television, or any type of radio receiver, to a terminal such as a phone, a cellular or mobile phone, a personal computer, a television, or a personal office assistant

10 (figure 1).

1/4

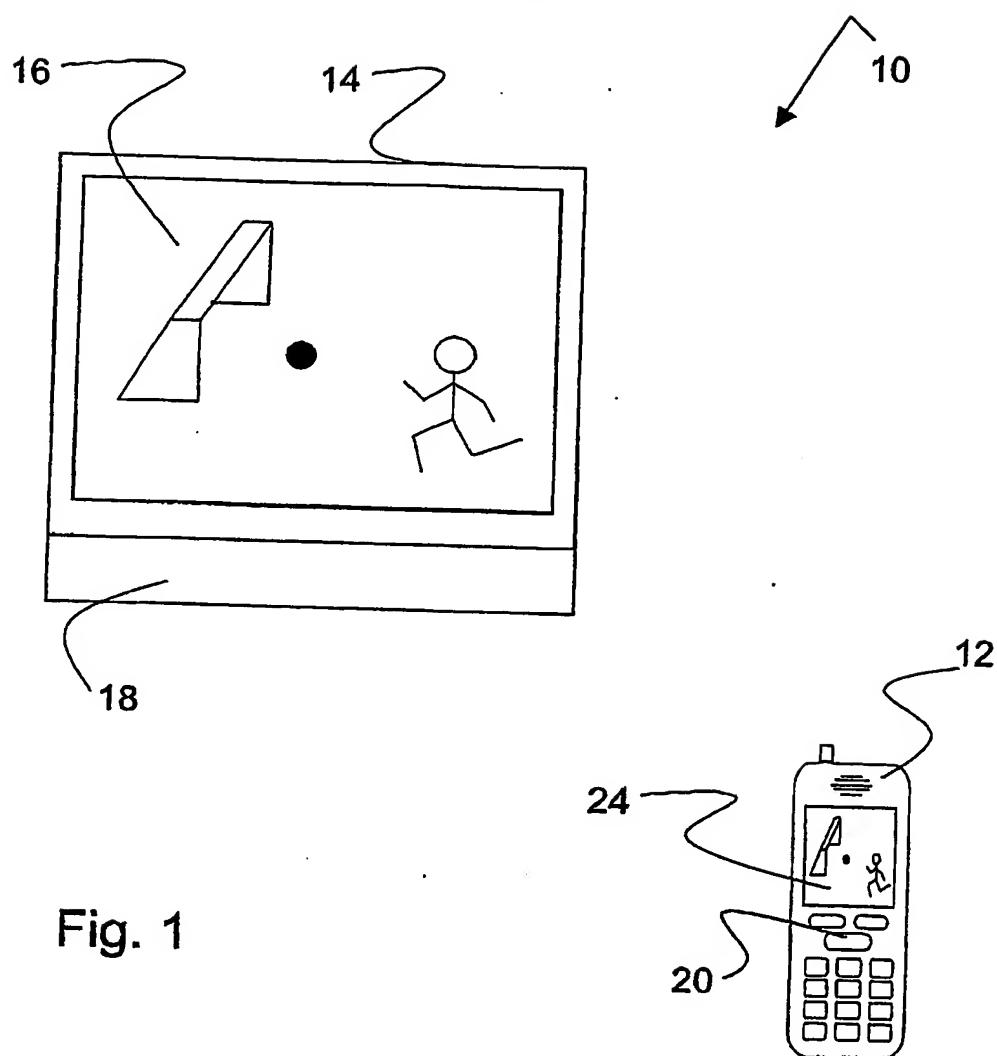


Fig. 1

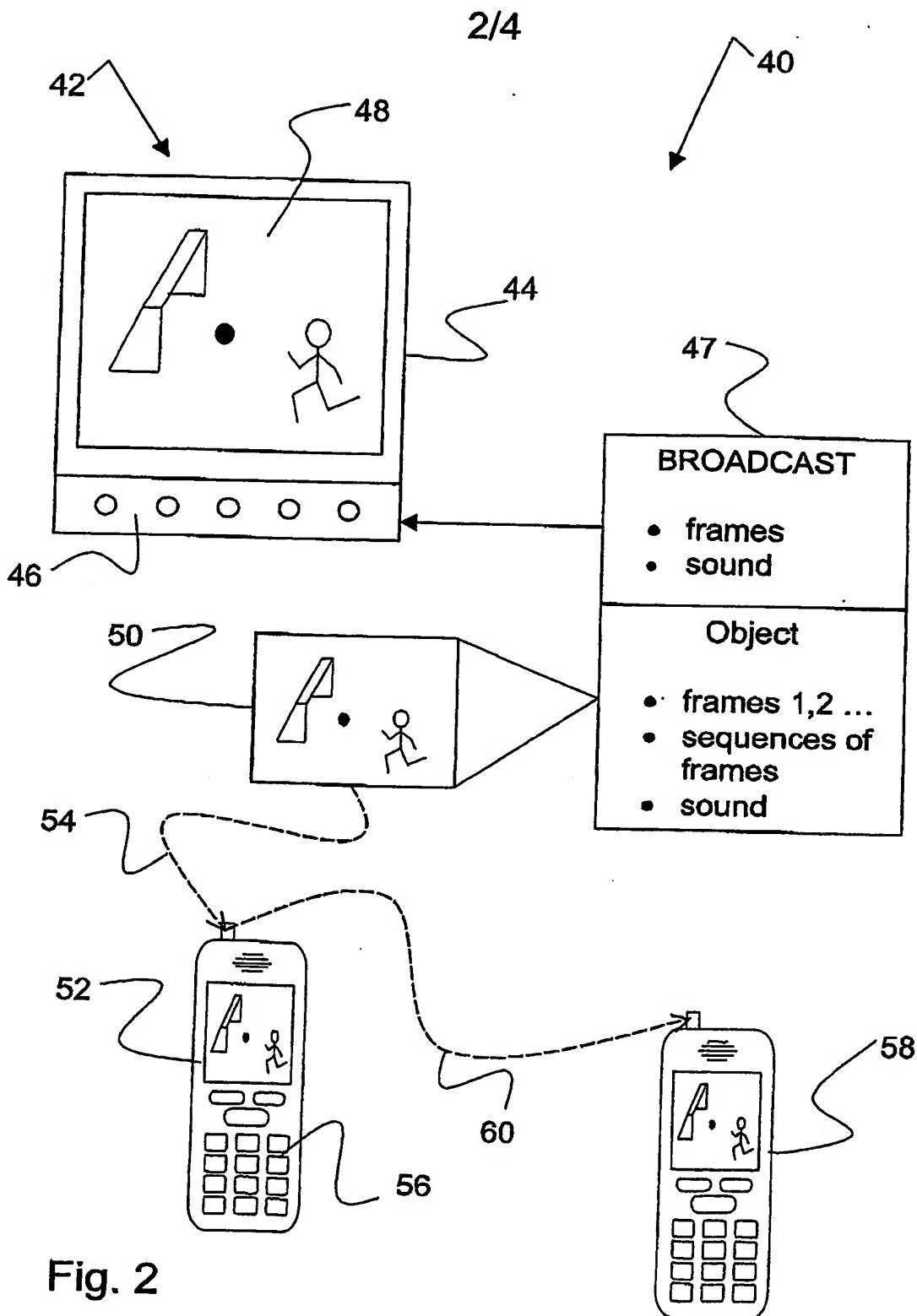
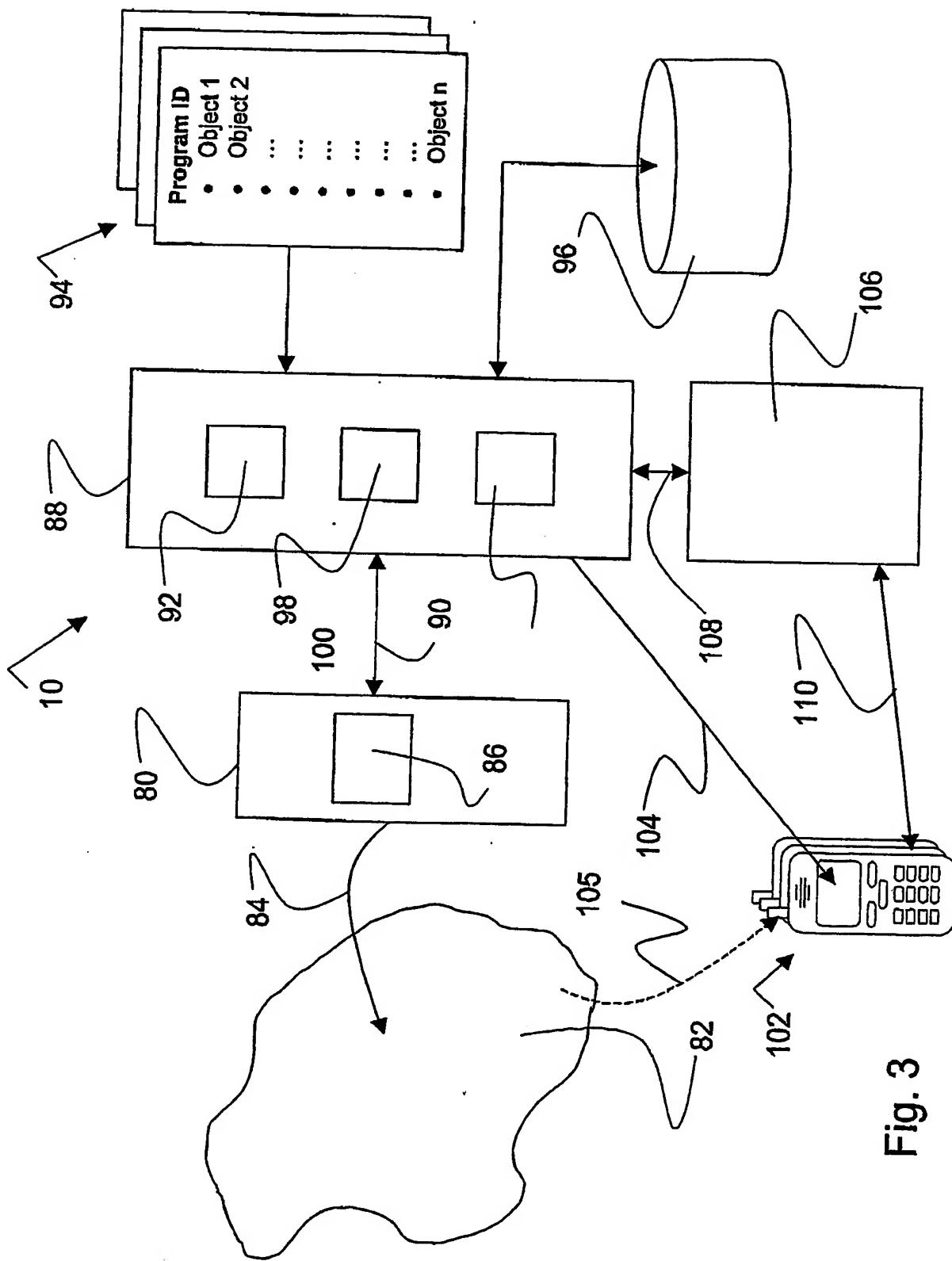


Fig. 2

3/4



3

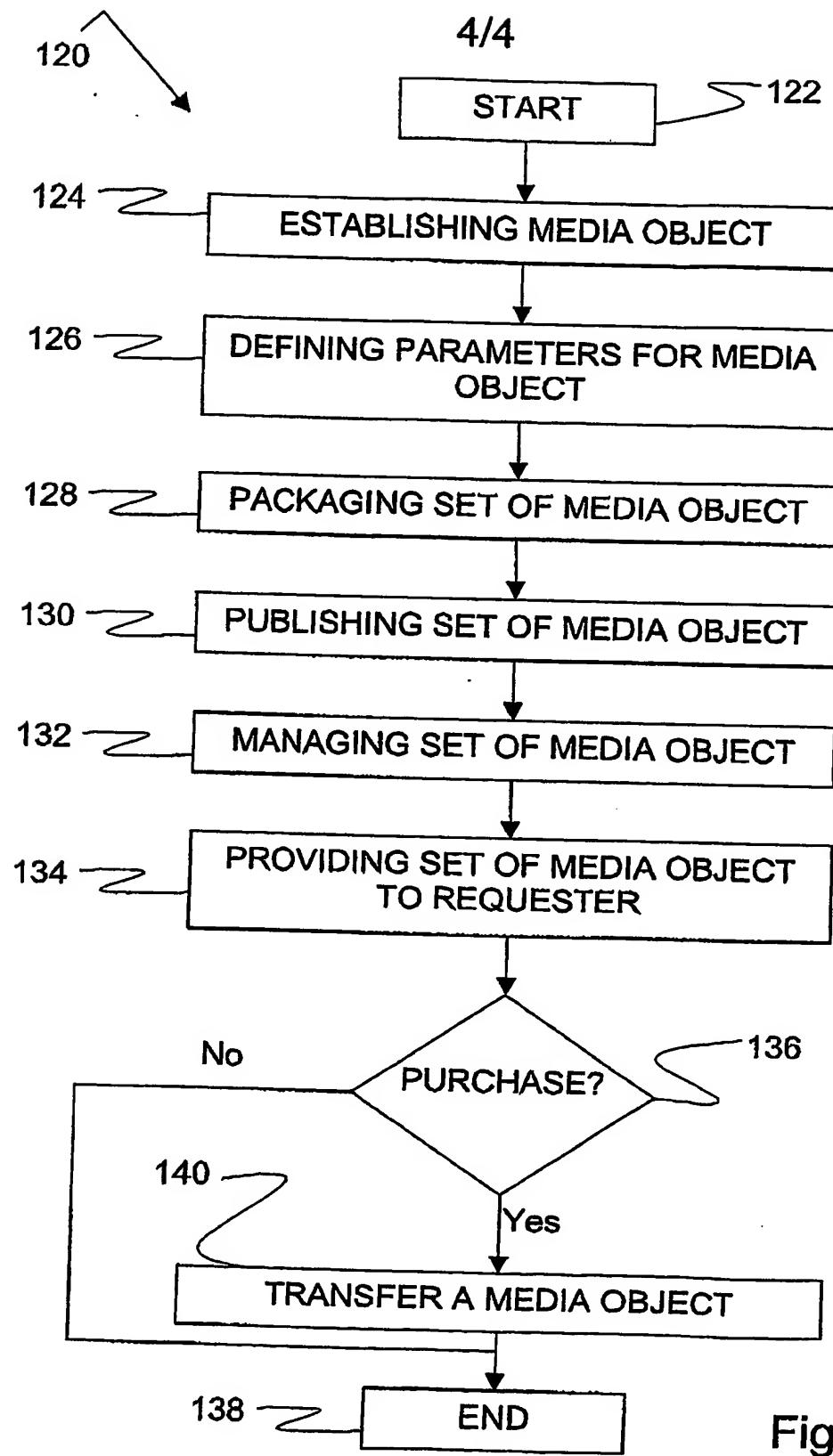


Fig. 4

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